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NEW MEXICO WILDERNESS

Supplemental Draft Environmental Assessment

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Dear Interested Party:

This document is a draft Environmental Assessment (EA) for seven Bureau of Land Management Wilderness Study Areas in New Mexico. These seven areas originally contained significant amounts of "split estate" (Federal surface/non-Federal subsurface) which were deleted from Wilderness consideration following the Secretary of the Interior's policy announcement of December 28, 1982. These deletions created new boundaries for the Wilderness Study Areas. These seven areas were then reinventoried and studied based upon their new boundaries. This Draft supplements the four BLM New Mexico District Draft EAs which were previously released on March 30, 1983.

The Area Managers have made the recommendations displayed in this Draft EA. We invite your review and comment on this document. Your comments should be sent to the Area Manager responsible for the Wilderness Study Area upon which you are commenting.

Area Managers for the Wilderness Study Areas covered in this document are:

Herrick Hanks	Ed Roberts	William J. Harkenrider, Jr.
Area Manager	Area Manager	Area Manager
Rio Puerco Resource	Socorro Resource	Las Cruces/Lordsburg
Area	Area	Resource Area
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Please submit your comments to the appropriate Area Manager by September 30, 1983. Based upon the public comments, the recommendation made by the Area Managers will be reevaluated and will subject to the District Managers' concurrence in the Final EA.

Sincerely yours,

Charles W. Luscher
State Director

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CHAPTER 1

PURPOSE AND NEED

Introduction

This supplemental Draft Environmental Assessment (EA) addresses seven Bureau of Land Management (BLM) Wilderness Study Areas in New Mexico. These seven areas originally contained significant amounts of split estate (Federal surface/non-Federal subsurface) which was deleted from wilderness consideration following the Secretary's Policy Announcement of December 28, 1982. As a result, these seven areas were reinventoried and restudied. This Draft EA supplements the four New Mexico District Draft EAs which were previously released on March 30, 1983.

The New Mexico BLM has modified its administrative boundaries since the four District Draft EAs were released. The modification had several effects, including moving some Wilderness Study Areas to the jurisdiction of a different Resource Area or District, and changing Socorro from a District to a Resource Area. (Most of the old Socorro District is now a Resource Area administered by Las Cruces District. The remaining portion is administered by the Albuquerque District.)

As a result of this change, only three District Final EAs will be prepared. The WSAs that were evaluated in the Socorro District Draft EA, as well as the WSAs in this supplemental draft EA, will be incorporated into the appropriate District final EA. The Roswell District is not affected by this supplemental EA.

Need for the Proposal

The Federal Land Policy and Management Act (FLPMA) of 1976 mandated the BLM to examine the wilderness potential of certain areas of public land. The wilderness review provision of FLPMA, Section 603, directs the BLM to conduct an inventory to identify all roadless areas of 5,000 acres or more that have wilderness characteristics. These areas are called Wilderness Study Areas (WSAs). Once WSAs have been identified, they are studied through BLM's planning system to determine whether each is suitable for preservation as wilderness or is more suitable for other uses. The findings of these studies lead to recommendations, through the Secretary of the Interior and the President, to Congress. Only Congress has the authority to designate wilderness.

The BLM New Mexico Wilderness Study Planning Process

In New Mexico, 33 WSAs are being studied as part of a statewide planning process. (See Map 1 for WSAs in New Mexico.) In accordance with BLM planning regulations, the Category III plan amendment process is being followed. The process provides for site-specific analysis through preparation of District Draft EAs and this supplemental Draft EA.

After the Draft EAs are revised into three District Final EAs, a statewide draft Environmental Impact Statement will be prepared which will summarize cumulative impacts and include the recommendations of the BLM New Mexico State Director. These recommendations will be based upon District and Area Managers' recommendations and any new information including public comment. The State Directors' will also take into account the BLM Wilderness Study Criteria which require consideration of representation of basic ecosystems in the National Wilderness Preservation System.

Wilderness Study Areas

The seven WSAs addressed in this document are listed in Table 1-1 and the general location of these WSAs is shown on Map 1. One of the WSAs is located in the Albuquerque District and six of the WSAs are located in the Las Cruces District which now includes a portion of the former Socorro District. These WSAs are displayed on Maps 2 through 7.

TABLE 1-1

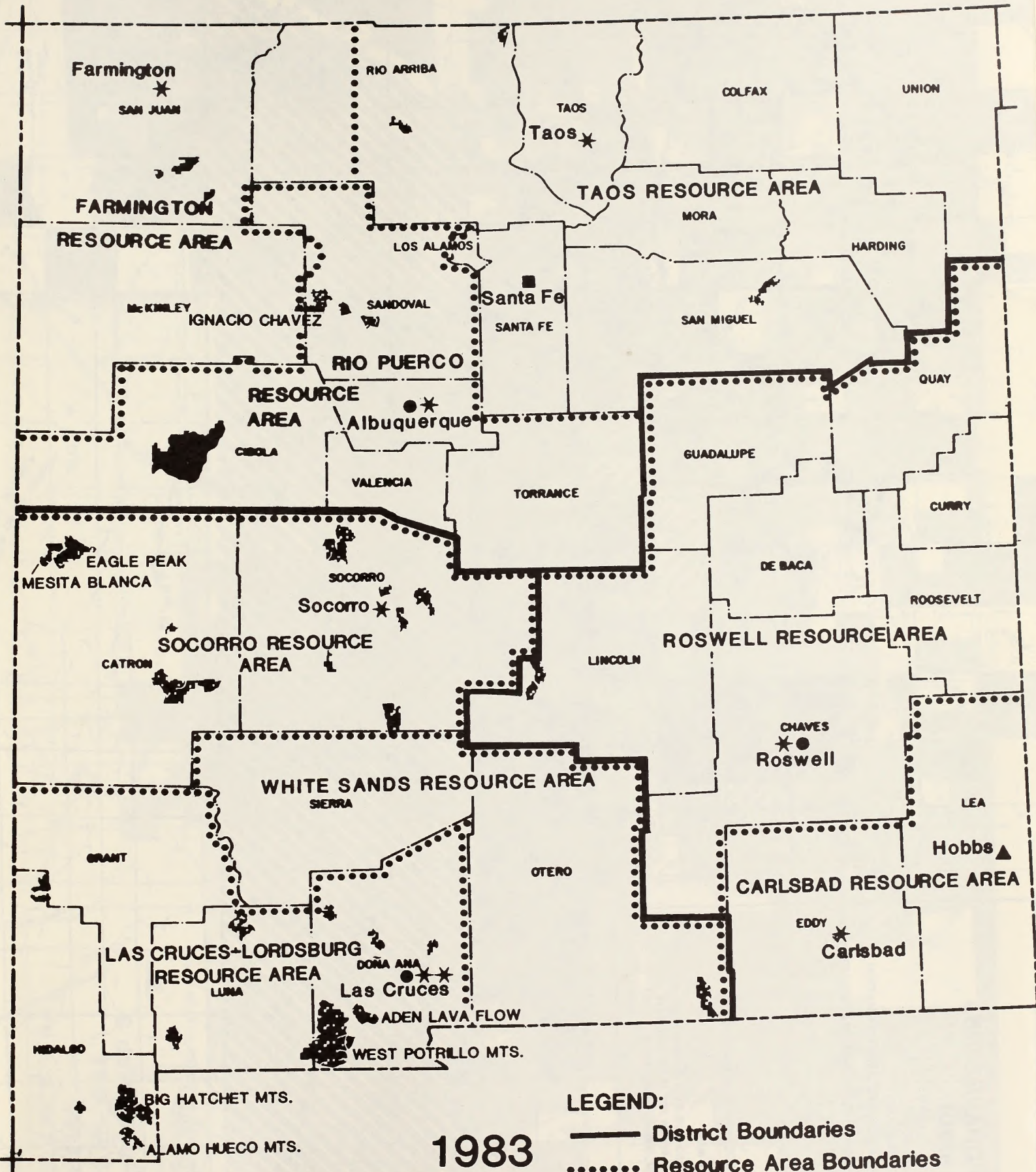
Wilderness Study Areas

<u>Area Name</u>	<u>Area Number</u>	<u>Current</u> ^{a/} <u>Acreage</u>	<u>Original</u> ^{b/} <u>Acreage</u>
ALBUQUERQUE DISTRICT			
<u>Rio Puerco Resource Area</u>			
Ignacio Chavez	NM-010-020	9,961	33,263
LAS CRUCES DISTRICT			
<u>Socorro Resource Area</u>			
Eagle Peak	NM-020-019	32,748	43,960
Mesita Blanca	NM-020-018	16,429	19,414
<u>Las Cruces/Lordsburg Resource Area</u>			
Aden Lava Flow	NM-030-053	23,857	25,287
Alamo Hueco Mountains	NM-030-038	10,796	16,512
Big Hatchet Mountains	NM-030-035	58,014	65,872
West Potrillo Mountains/Mount Riley	NM-030-052	155,105	157,185

Source: BLM Albuquerque and Las Cruces District Offices Files, 1983.

Notes: ^{a/} The acreages shown are approximate and reflect the deletion of split estate acreage.

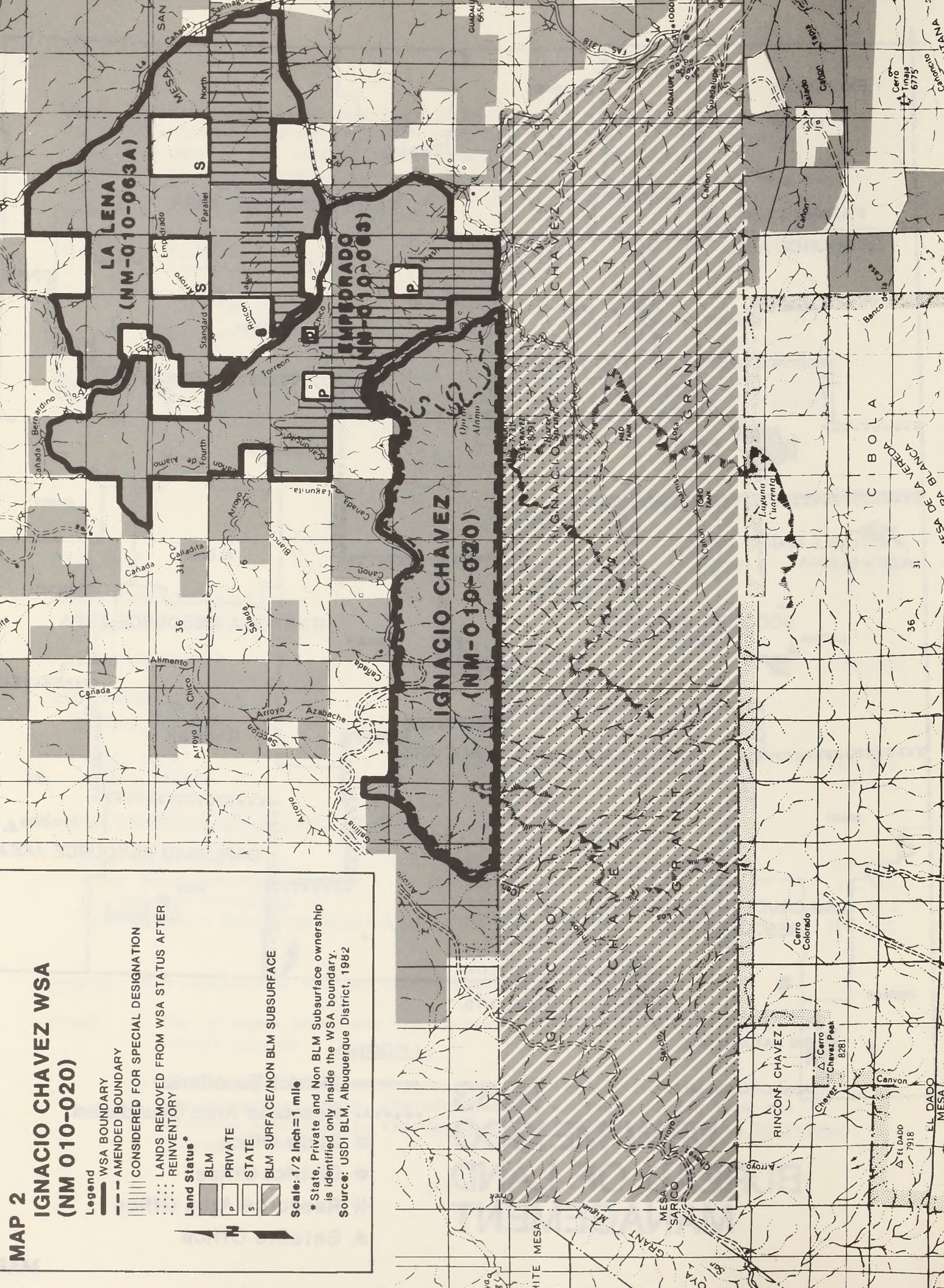
^{b/} The acreages shown are approximate and reflect corrections made during the wilderness study, therefore, these acreages differ from the acreages published in the New Mexico Wilderness Study Area Decisions (November 1980).



MAP 2

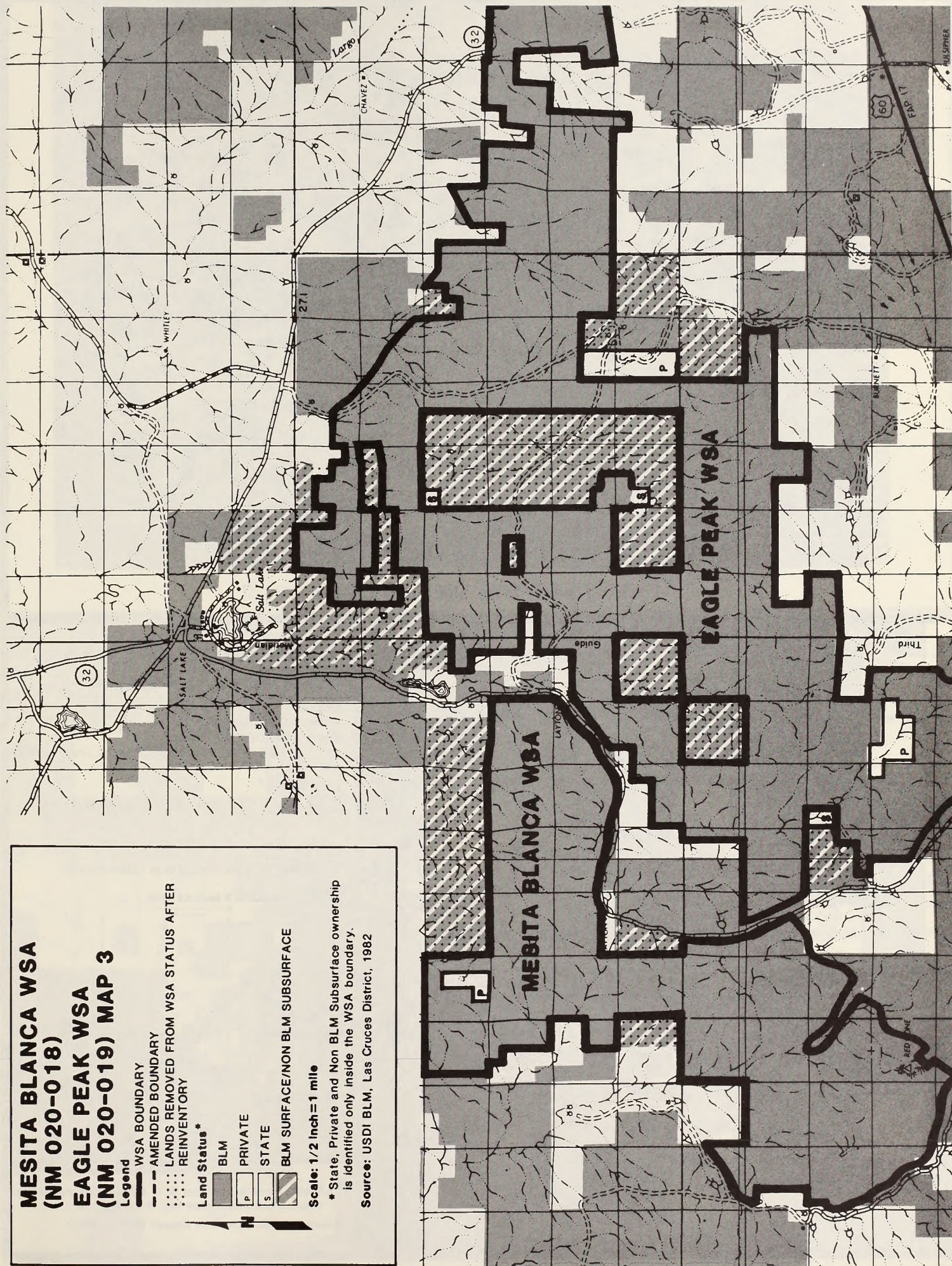
IGNACIO CHAVEZ WSA (NM 010-020)

- Legend**
- WSA BOUNDARY
 - AMENDED BOUNDARY
 - CONSIDERED FOR SPECIAL DESIGNATION
 - LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY
- Land Status***
- BLM
 - PRIVATE
 - STATE
 - BLM SURFACE/NON BLM SUBSURFACE
- Scale: 1/2 inch = 1 mile**
- * State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.
Source: USDI BLM, Albuquerque District, 1982



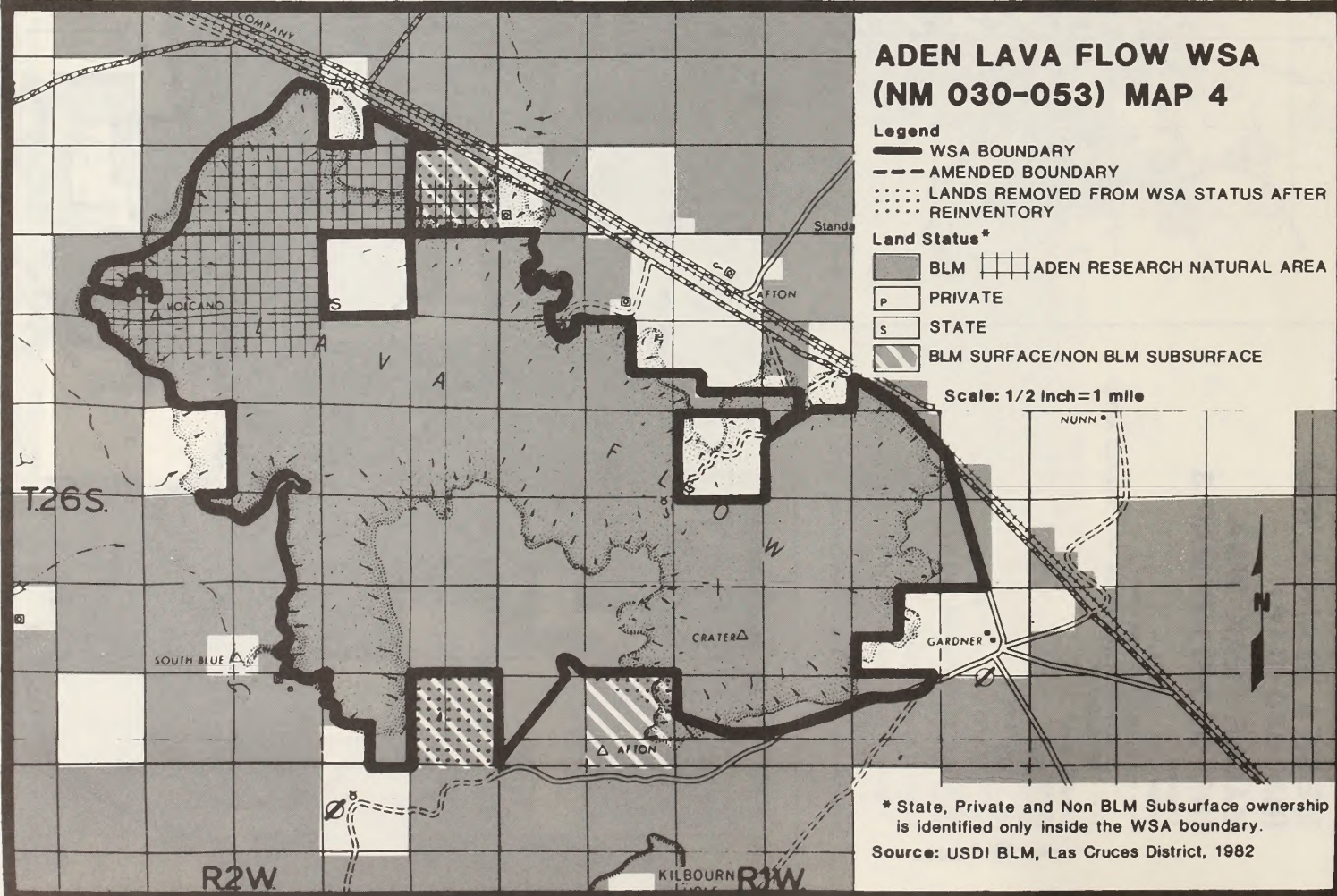
MESITA BLANCA WSA (NM 020-018) EAGLE PEAK WSA (NM 020-019) MAP 3

- Legend**
- WSA BOUNDARY
 - AMENDED BOUNDARY
 - LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY
- Land Status***
- BLM
 - PRIVATE
 - STATE
 - BLM SURFACE/NON BLM SUBSURFACE
- Scale: 1/2 inch=1 mile**
- * State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.
- Source: USDI BLM, Las Cruces District, 1982



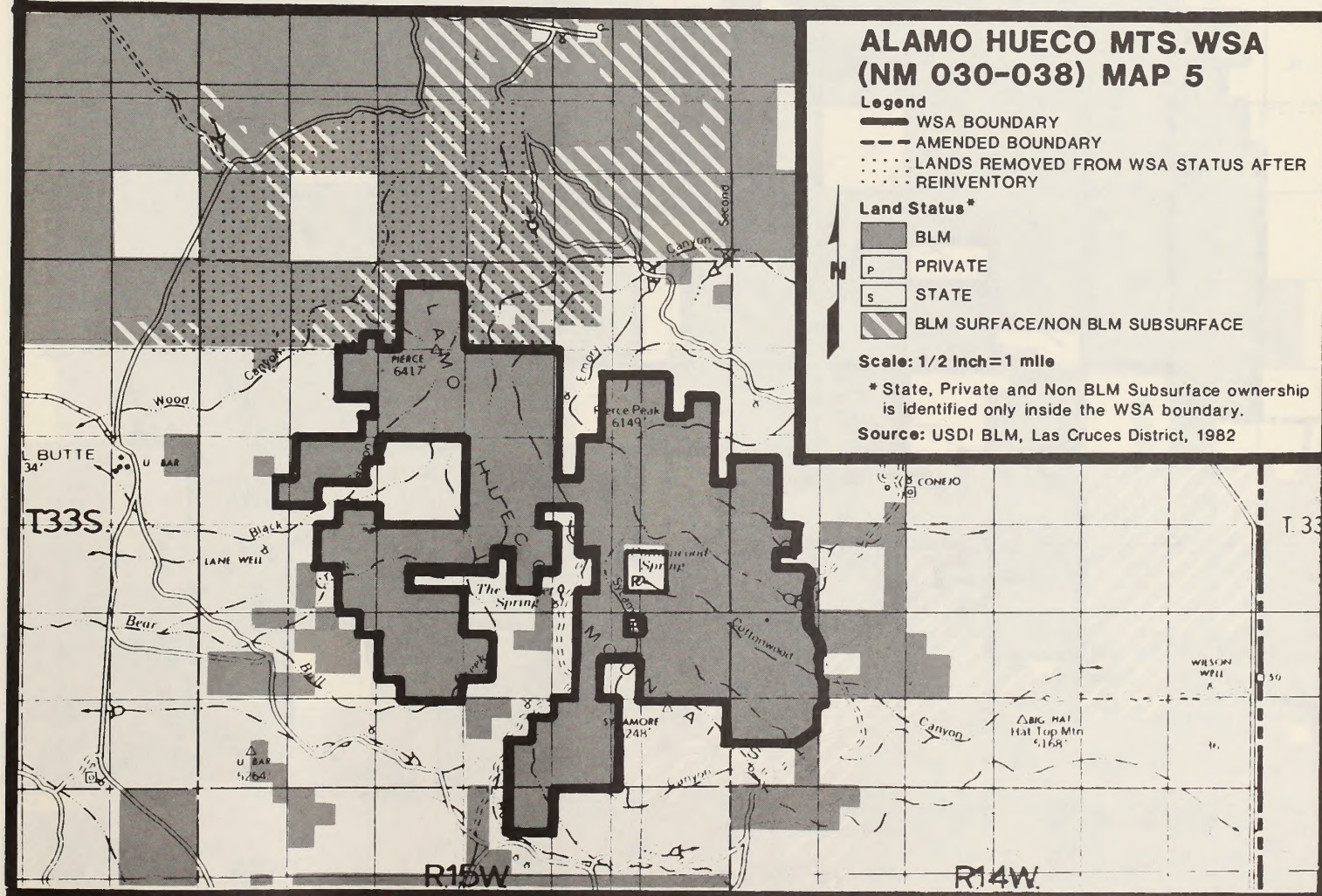


Looking west from the Aden Crater.





Overview of the Alamo Hueco Mountains WSA.



MAP 6

BIG HATCHET MTS. WSA (NM 030-035)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

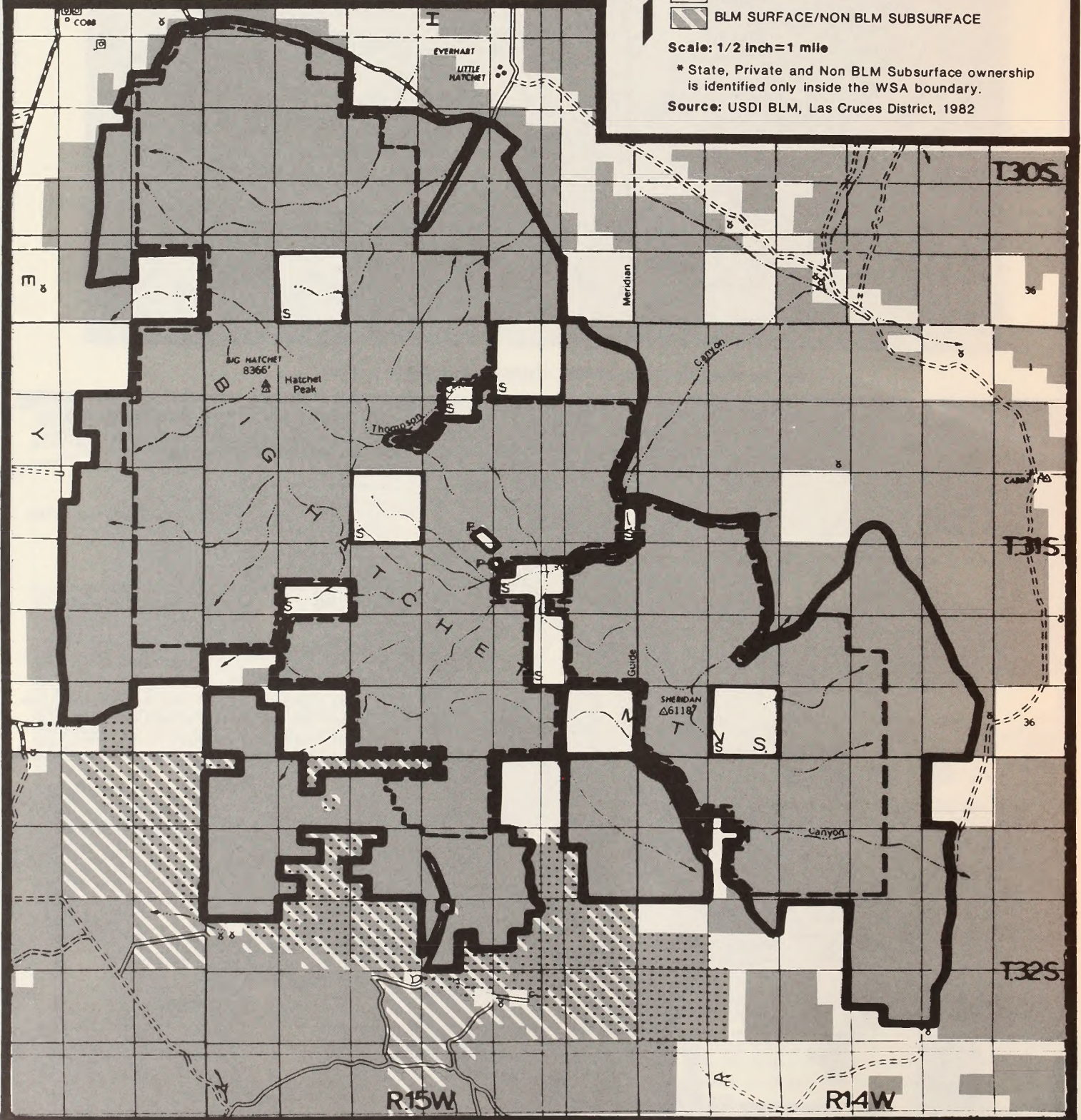
Land Status*

- BLM
- P PRIVATE
- S STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



MAP 7

WEST POTRILLO MTS. & MT. RILEY WSA (NM 030-052)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER
- REINVENTORY

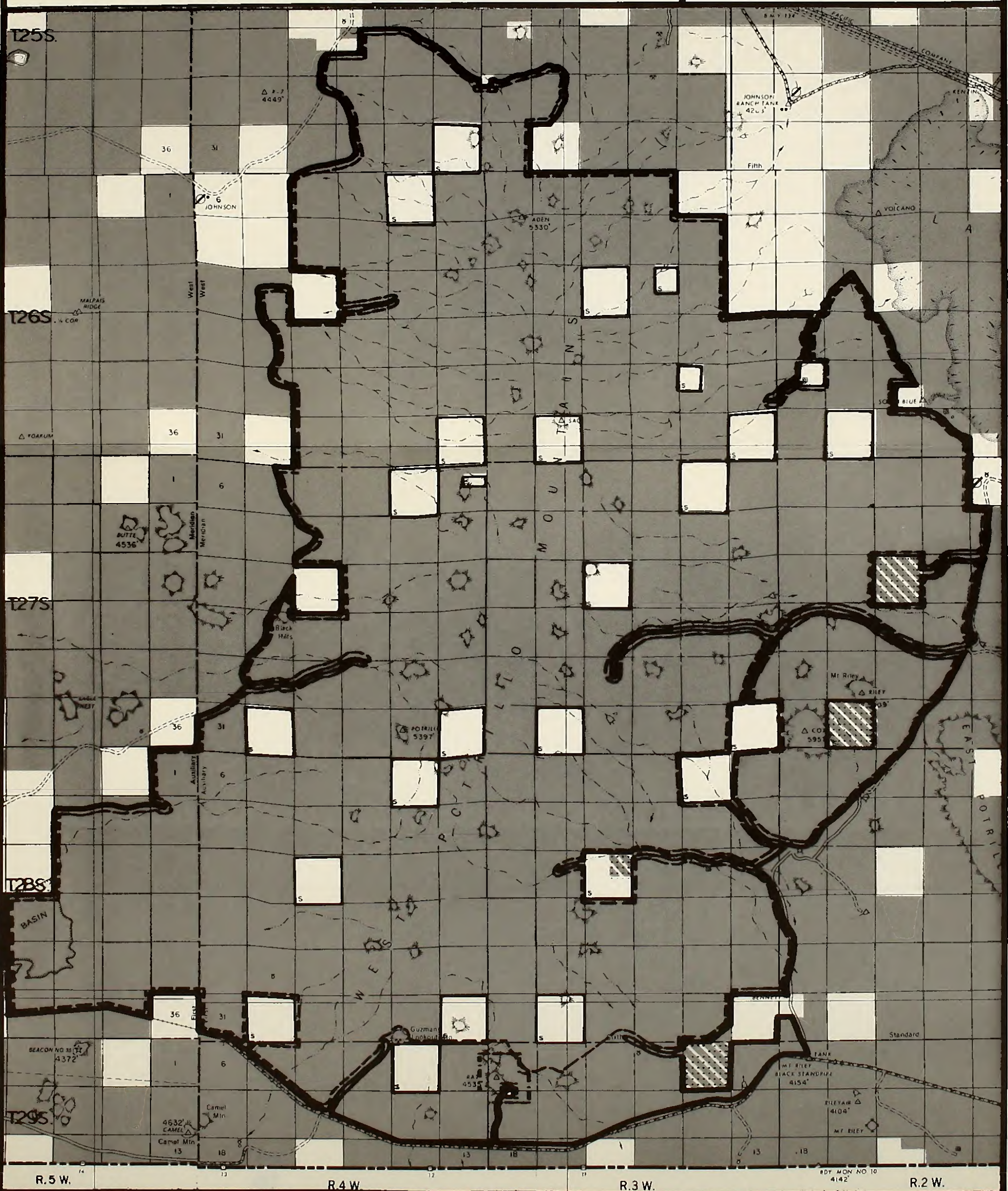
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE
- CHAPPARRAL CINDER CLAIMS

Scale: 1/2 Inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



CHAPTER 2

ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

Alternatives

For each Wilderness Study Area (WSA), an All Wilderness and No Action (No Wilderness) Alternative is evaluated. The All Wilderness Alternative analyzes the environmental consequences resulting from wilderness designation of the entire WSA. The No Action Alternative represents management in accordance with the current BLM land use plans that would be in effect without wilderness designation.

In developing other alternatives for each WSA, issues raised during public involvement and analysis by BLM specialists resulted in the formulation of an alternative which considers only a portion of the WSA for wilderness designation. This alternative is called an Amended Boundary Alternative, and it was developed based upon the results of scoping where (1) an opportunity exists to reduce conflicts between wilderness and other resources or (2) an opportunity exists to improve the long-term manageability of the area as wilderness. Manageability takes into consideration non-Federal inholdings or non-Federal lands adjacent to the WSA, valid existing rights, man-made features and identifiable boundaries. The Amended Boundary Alternative is evaluated for the Ignacio Chavez WSA, the Big Hatchet Mountains WSA and the West Potrillo Mountains/Mount Riley WSA.

An alternative considered but dropped from further study was No Wilderness/Amend the Existing Land Use Plan. Amending the existing land use plan would result in different management approaches to provide for special protection or increased development. This alternative was not included for any of the seven WSAs because the existing land use plans are considered adequate under the No Wilderness alternative. Table 2-1 lists the current land use plans in effect for each WSA. The alternatives considered for each WSA are displayed in Table 2-2.

Preferred Alternatives

The Preferred Alternative for each WSA is indicated on Table 2-2. The Preferred Alternative represents the recommendation made by the respective Resource Area Manager. Detailed discussions of these WSAs are included in the Wilderness Analysis Reports which appear in Appendices A through G.

TABLE 2-1

LAND USE PLANS

<u>WSA Name</u>	<u>WSA Number</u>	<u>Current Land Use Plan</u>
Ignacio Chavez	NM-010-020	Upper Rio Puerco and Cabezon Management Framework Plan (MFP) (1972)
Eagle Peak	NM-020-019	Divide MFP (1983)
Mesita Blanca	NM-020-018	Divide MFP (1983)
Aden Lava Flow	NM-030-053	Southern Rio Grande MFP (1981) Las Cruces/Lordsburg (LC/L) MFP Amendment/EIS (1983)
Alamo Hueco Mountains	NM-030-038	Hermanas MFP (1971) LC/L MFP Amendment/EIS (1983)
Big Hatchet Mountains	NM-030-035	Hermanas MFP (1971) LC/L MFP Amendment/EIS (1983)
West Potrillo Mountains/ Mount Riley	NM-030-052	Southern Rio Grande MFP (1981) LC/L MFP Amendment/EIS (1983)

Source: Albuquerque and Las Cruces District Office files, 1983.

TABLE 2-2

SUMMARY OF ALTERNATIVES

<u>WSA/Acres</u>	<u>Preferred Alternative</u>	<u>All Wilderness</u>	<u>Amended Boundary</u>	<u>No Action (No Wilderness)</u>
Ignacio Chavez NM-010-020 9,961 acres	Recommend 8,780 acres suitable for wilderness designation and 1,181 acres unsuitable for wilderness designation.	Recommend 9,961 acres suitable for wilderness designation.	Same as the Preferred Alternative	Recommend 9,961 acres unsuitable for wilderness designation.
Eagle Peak NM-020-019 32,748 acres	Recommend 32,748 acres unsuitable for wilderness designation.	Recommend 32,748 acres suitable for wilderness designation.	N/A	Same as Preferred Alternative
Mesita Blanca NM-020-018 16,429 acres	Recommend 16,429 acres unsuitable for wilderness designation.	Recommend 16,429 acres suitable for wilderness designation.	N/A	Same as Preferred Alternative.
Aden Lava Flow NM-030-053 23,857 acres	Recommend 23,857 acres suitable for wilderness designation.	Same as the Preferred Alternative.	N/A	Recommend 23,857 acres unsuitable for wilderness designation.
Alamo Hueco Mountains NM-030-038 10,796 acres	Recommend 10,796 acres unsuitable for wilderness designation.	Recommend 10,796 acres suitable for wilderness designation.	N/A	Same as the Preferred Alternative.
Big Hatchet Mountains NM-030-035 58,014 acres	Recommend 41,293 acres suitable for wilderness designation and 16,721 acres unsuitable for wilderness designation.	Recommend 58,014 acres suitable for wilderness designation.	Same as the Preferred Alternative	Recommend 58,014 acres unsuitable for wilderness designation.
West Potrillo Mountains/Mount Riley NM-030-052 155,105 acres	Recommend 147,100 acres as suitable for wilderness designation and 8,005 acres unsuitable for wilderness designation.	Recommend 155,105 acres suitable for wilderness designation.	Same as the Preferred Alternative	Recommend 155,105 acres unsuitable for wilderness designation.

Source: BLM Albuquerque and Las Cruces District Wilderness Analysis Reports, 1983.

CHAPTER 3

AFFECTED ENVIRONMENT

OVERVIEW OF THE RESOURCE AREAS

The seven WSAs in this document are located in the Rio Puerco, Socorro and Las Cruces/Lordsburg Resource Areas.

Rio Puerco Resource Area

This Resource Area contains the Ignacio Chavez WSA, which is located approximately 50 air miles northwest of Albuquerque.

Major Land Uses

Principle uses of public land in this Resource Area include livestock grazing, fuelwood gathering, mining and scientific study.

Grazing is the predominant land use occurring throughout the Resource Area. The fuelwood gathering occurs in the forested areas, especially near Albuquerque. Scientific studies are ongoing on the Resource Areas numerous historic and prehistoric cultural sites and paleontological sites.

Social and Economic Conditions

The Ignacio Chavez WSA is located in Sandoval and McKinley Counties. Sandoval County had a 10 percent growth rate between 1970 and 1980, while McKinley experienced a growth rate of less than 5 percent. Population density by square mile for Sandoval County is 9.4 (34,799 persons in 3,717 square miles). The population density for McKinley County is higher at 10.4 with 55,536 persons in 5,461 square miles.

The majority of the population within these counties is classified as rural. Most of these people exhibit attitudes and values typical of rural western United States societies. They value the lifestyle offered by the local communities. Much of the support for wilderness and its values comes from outside Sandoval and McKinley Counties by people who are less directly affected.

Socorro Resource Area

This Resource Area is located in west-central New Mexico and contains the Mesita Blanca and Eagle Peak WSAs.

Major Land Uses

Public land in the Socorro Resource Area is utilized for livestock grazing, mining, fuelwood products, scientific research and for various recreational uses.

Grazing is the predominant land use. In Cibola and Socorro Counties, mining is also a significant economic activity. Among the minerals produced are uranium, barite, fluorite, cinders, sand and gravel. There is no present production of petroleum, natural gas or coal in the Resource Area. It is anticipated, however, that coal leasing and development all occur in the western portion of the Resource Area in the closing decade of this century.

Scientific activities on public land in the Resource Area include research at archaeological sites and at the National Radio Observatory's Very Large Array, the world's largest radio telescope.

Outdoor recreation in the Resource Area includes a wide range of sports and leisure-time activities. General outdoor recreation includes sightseeing, picnicking, camping, backpacking, hiking, horseback riding, sport shooting, four-wheeling, trail-biking and birdwatching, as well as more specialized activities such as caving, rock climbing, rock hounding and bird and big game hunting.

Social and Economic Conditions

This analysis focuses on Catron County, which would be most affected by wilderness designation.

This portion of west-central New Mexico is typically rural in nature and generally characterized by sparse population, low incomes, high unemployment and a multicultural orientation influenced by a Spanish heritage.

Socorro, Belen, Los Lunas, Grants and Albuquerque are the major trade and service centers for the region.

The area is predominantly rural with the communities of Grants and Socorro representing the only areas which may be characterized as urban. Catron County has a population of approximately 2,720. The area's population experienced a growth rate of 23.7 percent between 1970 and 1980 as compared to the State's 27.8 percent growth rate. The rural character of this area is indicated by an average population density of 2.5 persons per square mile while New Mexico's average density is 10.7 persons per square mile.

Most people living in sparsely populated Catron County are generally ranch oriented. The rural character of the area, with its open spaces, fresh air and solitude, is highly valued, as are the personal freedom and independence it affords. The residents also value the lifestyle offered by the local communities, which is characterized by extensive acquaintances, a lack of urban problems and a relaxed pace. Additionally, most residents feel the area is a good place to raise children, and they wish to maintain the status quo.

Socorro (population approximately 7,173) is the focus of much of the social and economic activity of Catron County. The attitudes and perceptions of the residents of Socorro are in many ways similar to those of the surrounding rural areas. There is, however, a wide range of attitudes in the community due in large part to the faculty and 1,300 students of New Mexico Institute of

Mining and Technology. The presence of this highly regarded college and the research community associated with the Very Large Array, Langmuir Laboratory and other research facilities combine with the multicultural character of Socorro to produce a highly diverse community. Much of the support for wilderness designation and environmental issues in general comes from the academic and research community.

Mineral exploration for scientific and development purposes is also highly valued by much of the academic community and by numerous mining claimants in the Socorro area.

Ranching, mining, government services and tourism form the basis of the economy in Catron County. The area is considered economically poor.

In 1980, per capita income for Catron County was \$5,171 as compared to \$7,878 for the State. This indicated that the county is one of the State's lowest in per capita personal income. It is also low compared to other states in the southwest region (except Utah) and in the United States.

Las Cruces/Lordsburg Resource Area

This Resource Area contains four of the seven WSAs covered in this document. These four WSAs are Aden Lava Flow, Alamo Hueco Mountains, Big Hatchet Mountains and West Potrillo Mountains/Mount Riley.

Major Land Uses

Public land uses include livestock grazing, wildlife use, mining and various desert recreation uses. Grazing is the predominant land use throughout the Resource Area. Significant mining activities occur in Grant and Hidalgo Counties. Minerals produced include gold, silver, copper, lead, zinc, building stone and sand and gravel. There is no present production of petroleum, natural gas, uranium or coal in the Resource Area.

Several areas in the Resource Area have high potential for geothermal energy. The greatest potential is associated with the Rio Grande rift in Dona Ana County. The potential for direct use applications in the Las Cruces area is high. Several local industries are planning to develop geothermal resources for space and domestic water heating. New Mexico State University in Las Cruces is currently utilizing geothermal energy for direct use applications. Two commercial greenhouses are being heated with hot water in the Animas Valley, southwest of Lordsburg.

Outdoor recreation in the Resource Area consists of a wide range of sports and leisure-time activities. Outdoor recreation activities include sightseeing, picnicking, camping, backpacking, hiking, four-wheeling, trail-biking, bird-watching, rockclimbing, rockhounding, sport shooting, horseback riding and hunting.

Social and Economic Conditions

Major trade and service centers for the area are Las Cruces, Silver City, Deming and Lordsburg.

Dona Ana, Luna and Hidalgo Counties exhibited varying population characteristics from 1960-80. The average annual percent change in population for this period of time did not exceed 4 percent in any of the counties.

There are five Standard Metropolitan Statistical Areas (SMSAs) with populations of 90,000 or more within an 8-hour drive (400 miles) of the WSAs. These SMSAs have a combined 1980 population of over 2.8 million people.

The counties that have WSAs are sparsely populated with the major concentrations of people in Dona Ana County with a 25.2 population density per square mile. Hidalgo County is the most sparsely populated county with a 1.8 population density per square mile. Luna County has a 5.3 population density per square mile.

Residents in the counties that are sparsely populated (Hidalgo and Luna) exhibit attitudes and values typical of rural, ranch-oriented societies in the Western United States. The rural character of the area is what some residents value most about their lifestyle. Specifically, they appreciate the western way of life, which includes among its components the following: small-town living with its customs of friendliness, neighborliness and mutual aid; a love of the great outdoors; and adherence to traditional, conservative values (Mountain West Research 1975).

Dona Ana County contains vast rural areas, however, increased population pressures, the influence of the larger city and tourism add a new element to the traditional rural perspective. Generally, those residents of Dona Ana County (primarily in Las Cruces) have migrated from other communities for education and employment opportunities, bringing with them their different values. However, some residents in Dona Ana County tend to hold the same rural attitudes and values as those residents in the sparsely populated counties (Harbridge House, Inc. 1978).

Although the Las Cruces District is rich in culture and natural resources, the area is considered economically poor. Low per capita income, combined with housing, medical care, legal and other human services, have been shown to be substandard. Agriculture, ranching, mining and government have traditionally been the primary activities, with tourism becoming a recent addition.

The total per capita personal income in 1980 for each of the three counties containing WSAs was below the \$7,878 per capita income for the State of New Mexico. In ranking the 32 counties in the State of New Mexico by total per capita personal income in 1980, Dona Ana County ranked 22 (\$6,328), Luna ranked 19 (\$6,985), Hidalgo ranked 11 (\$7,848).

WILDERNESS STUDY AREAS

Tables 3-1 and 3-2 summarize the affected environment and the existing and potential uses of each WSA.

TABLE 3-1
SUMMARY OF AFFECTED ENVIRONMENT

[illegible]

TABLE 3-1 (CONTINUED)
SUMMARY OF AFFECTED ENVIRONMENT

WSA	Acreage	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened or Endangered Species	Visual	Cultural	Wilderness Values
AGUA FRIA CANYON											
(1) Entire WSA	23,857 acres	23,857 acres public land	Volcanic craters, rough broken lava fields, and rolling sand dunes.	Extensive basalt lava flow with several craters. Small area of cobbly dunes. Within Rio Grande Rift.	WSA lies within the Mesilla Basin. Surface water drains predominantly as sheet flow with no distinct channel system. Groundwater found in Santa Fe formations. Limited soils in the volcanic deposits. To the east, soils are shallow and sandy.	18,373 acres grass-mixed desert shrub, 3,879 acres mesquite, 1,261 acres creosote, 344 acres grass-mixed desert shrub.	Melanistic species, raptors, bats, valuable wildlife habitat.	Possible habitat for one Bureau sensitive plant species.	20,681 acres Class III, 3,176 acres Class IV	One major paleontological site.	The WSA appears natural. Opportunities for solitude are outstanding. Opportunities for primitive and unconfined recreation are not outstanding.
(2) Portion Recommended Suitable	23,857 acres										
MOUNT HUACO MOUNTAINS											
(1) Entire WSA	10,796 acres	10,796 acres public land, 200 acres private land inholdings	Highly eroded volcanic mountains characterized by mesas, vertical cliffs, and long canyons.	Fault block of layered volcanic flows. Dominated by high-angled faulting and jointing with possible sedimentary rocks underneath.	WSA lies within the Playas Basin. Surface water drains into the Playas and Hachita Valleys through an ephemeral stream system. Groundwater is found primarily in the valley fill. Soils are shallow and stony on the steep hillsides and deeper and gravelly on alluvial fans.	10,675 acres juniper-oak brush, 25 acres creosote, 20 acres mixed desert shrub, 76 acres deciduous trees.	Javelina, deer, mountain lion, raptor nesting.	Potential occurrence of one Bureau sensitive species and one special concern element. Desert bighorn sheep, coatimundi, thick billed kingbird, varied bunting, and possibly the giant spotted whiptail have been seen in or near the WSA. The gray wolf may pass through the area.	Class II	Sites include camps and caves. The cave sites have been identified as eligible for the National Register of Historic Places. They may contain resources of national significance.	The WSA appears natural and contains outstanding opportunities for solitude and primitive and unconfined recreation. Land ownership patterns limit recreational opportunities.
(2) Portion Recommended Suitable	0 acres										
BIG HATCHET MOUNTAINS											
(1) Entire WSA	58,014 acres	58,014 acres public land, 1,920 acres state land, and 46 acres private land inholdings	Rugged and steep mountain range cut by numerous canyons. Surrounding the range are gently sloping alluvial fans. U-Bar Ridge is located south of the mountain.	Fault block mountain with thick sections of Paleozoic sedimentary rocks.	WSA lies within the Playas Basin. Surface water drains into the Playas and Hachita Valleys through an ephemeral stream system. Groundwater is found principally in the valley fill. Soils are shallow and stony on the steep hillsides and deeper and gravelly on the alluvial fans.	28,752 acres pinyon-juniper mixed mountain shrub, 26,166 acres creosote, 316 acres mixed desert shrub, 2,420 acres tobosa-tarbrush, 338 acres tobosa, 22 acres mesquite.	Habitat for mountain lion, raptors, bats, mule deer, and javelina. Diversity in soils, elevation, and vegetation provides a variety of habitat types.	Potential occurrence of one Bureau sensitive plant species, two New Mexico special concern elements (plants), two state sensitive plant species. Two state-listed endangered animal species, desert bighorn sheep and Sonora mountain kingsnake, live in the range. Gray wolf may pass through the WSA.	45,214 acres Class II, 2,560 acres Class III, 10,240 acres Class IV.	Although there have been no systematic surveys, several small prehistoric sites have been reported in the area.	The WSA generally appears natural. The rugged topography, large size, and variety of resources provide outstanding opportunities for solitude and primitive and unconfined recreation.
(2) Portion Recommended Suitable	41,293 acres	41,293 acres public land, 1,920 acres state land, and 46 acres private land inholdings	The rugged and steep mountain range. Elevations range from 4,300 to 8,366 feet.	Fault block mountain with thick sections of Paleozoic sedimentary rocks.	Same as entire WSA.	27,382 acres pinyon-juniper mixed mountain shrub, 13,480 acres creosote, 316 acres mixed desert shrub, 40 acres tobosa-tarbrush, 68 acres tobosa, 7 acres mesquite.	Habitat for mountain lion, raptors, bats, mule deer, and javelina. Diversity in soils, elevation, and vegetation provides a variety of habitat types. Area is less diverse.	Same as entire WSA.	Class II	Same as entire WSA.	This portion of the WSA is especially natural. Opportunities for solitude and primitive and unconfined recreation are outstanding. This part of the WSA has the highest wilderness values and concentration of special features.
(3) Portion Recommended Unsuitable	16,721 acres	16,721 acres public land	U-Bar Ridge and portions of the alluvial fans surrounding the Big Hatchet Range. Elevation ranges from 4,300 feet to 5,585 feet.	U-Bar Ridge is a plunging syncline of limestone.	Small area of lower ephemeral drainages.	1,370 acres pinyon-juniper mixed mountain shrub, 12,686 acres creosote, 2,380 acres tobosa-tarbrush, 270 acres tobosa draws, 15 acres mesquite.	Less significant wildlife values than the entire WSA.	Potential occurrence of Bureau sensitive plant species and one special concern element. Otherwise, insignificant for threatened or endangered species.	3,921 acres Class II, 2,560 acres Class III, 10,240 acres Class IV.	No known sites.	This is the most unnatural portion of the range. The area includes several cherry-stemmed roads and rangeland developments. Opportunities for solitude and primitive and unconfined recreation are outstanding.

TABLE 3-1 (CONCLUDED)
SUMMARY OF AFFECTED ENVIRONMENT

WSA	Acres	Land Status	Topography	Geology	Water and Soils	Vegetation	Wildlife	Threatened or Endangered Species	Visual	Cultural	Wilderness Values
WEST POTRILLO MOUNTAINS AND MOUNT RILEY											
(1) Entire WSA	155,105 acres	155,105 acres public land, 12,011 acres state land, and 640 acres split estate inholdings	A wide variety of terrain including over 48 cinder cones, sand dunes, and playas.	Extensive basalt flows and cinder cones. Mountain peaks of intrusive rhyolite. Within Rio Grande Rift.	WSA forms a divide between the Mimbres and Mesilla Basins. Surface water drains into both basins through an ephemeral stream system. Groundwater in the Mesilla Basin is found primarily in the Santa Fe formation. In the Mimbres Basin, groundwater is found within the valley fill. Soils include shallow, stony soils of steep hillsides; gravelly sand on alluvial fans; deep sandy soils on flatter areas; and valley fill in the draws.	51,539 acres creosote malpais, 46,391 acres creosote-mixed desert shrub, gravelly and shallow sands, 14,781 acres creosote-mixed desert shrub-grass hills, 34,165 acres mesquite sandy, 5,229 acres mixed desert shrub-tobosa.	Different habitat types support a diversity of wildlife species. Wintering raptors. Low mule deer population. Waterfowl can be found in Indian Basin during the wet season.	Possible habitat for one Bureau sensitive plant species. Peregrine falcons have been seen in the area (nonresident).	Class IV.	Significant cultural resources include classic Mimbres sites.	The WSA appears natural. Opportunities for solitude and primitive and unconfined recreation are outstanding.
(2) Portion Recommended Suitable	147,100 acres	147,100 acres public land, 11,411 acres state land, and 640 acres split estate inholdings	A wide variety of terrain including over 48 cinder cones, sand dunes, and playas.	Extensive basalt flows and cinder cones. Mountain peaks of intrusive rhyolite. Within Rio Grande Rift.	Same as entire WSA.	51,607 acres creosote malpais, 44,140 acres creosote-mixed desert shrub gravelly and shallow sands, 12,468 acres creosote mixed desert shrub grass hills, 33,691 acres mesquite sandy, 5,194 acres mixed desert shrub-tobosa.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.
(3) Portion Recommended Unsuitable	8,005 acres	8,005 acres public land	Several cinder cones, sand dunes, and playas.	Basalt flows and cinder cones. Within Rio Grande Rift.	Some loss of ephemeral drainage and playas.	932 acres creosote malpais, 2,251 acres creosote-mixed desert shrub gravelly and shallow sands, 2,313 acres creosote mixed desert shrub grass hills, 2,474 acres mesquite sandy, 35 acres mixed desert shrub-tobosa.	No significant wildlife values.	No significant threatened or endangered animal habitat. Potential habitat for one Bureau sensitive plant species.	Same as entire WSA.	One known site--small El Paso phase hamlet.	Naturalness is degraded by cinder mining operations.

Source: BLM Albuquerque and Las Cruces District Wilderness Analysis Reports, 1983.

TABLE 3-2
EXISTING AND POTENTIAL USES

WSA	Minerals	Watershed	Livestock Grazing	Vegetative Products	Recreation	Education/Research	Realty Actions	Wildlife	Native American Uses
IGNACIO CHAVEZ									
(1) Entire WSA	Only minor exploration and development has occurred on the WSA. The use permits for these activities are associated with approximately 269 mining claims and 10 oil and gas lease applications. The highest potential for development within the WSA is associated with coal and humates.	Groundwater use within the WSA consists of one developed spring and three undeveloped springs. No watershed treatment projects are currently proposed.	The WSA includes parts of three grazing allotments. The WSA presently supports approximately 985 AUMs. Water pipelines and related structures are planned for construction within the WSA.	The WSA does contain a source of fuelwood. Other areas immediately southeast of the WSA have been open for commercial and home use fuelwood sales.	This WSA contains abundant opportunities for a variety of quality primitive recreation experiences. These recreation activities consist of backpacking, hiking, general camping, sightseeing, hunting, horseback riding, birdwatching, and photographic possibilities.	The variety of ecosystems located within the WSA provide an exceptional opportunity to utilize a "living laboratory" where natural systems can be observed. No existing education or research efforts are ongoing within the WSA.	No realty actions are planned.	The WSA is within the boundaries of the Upper Rio Puerco Habitat Management Plan. Closure to ORV use would protect wildlife habitat. Restraints would be placed on animal damage control and habitat manipulations.	Native Americans have traditionally used the area for firewood gathering, hunting, and snake catching. Recent interviews indicate that many places in and near this WSA have religious significance to Native Americans.
(2) Portion Recommended Suitable	Same as entire WSA.	Same as entire WSA.	Livestock grazing would remain similar to that described above with the exception of a reduction in AUMs because of fewer acres involved.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.
(3) Portion Recommended Unsuitable	Same as entire WSA.	No watershed treatment projects are pending or anticipated for this area.	The area is being utilized for livestock grazing and will continue to be used.	Little to no use of the area for forest products is expected.	The area can provide opportunities for those recreation activities described above in the entire WSA. The quality of the recreation experience would be lessened because of the marginal quality of the environment within the unsuitable area.	Same as entire WSA.	Same as entire WSA.	Since this portion would be located within the area covered by the Upper Rio Puerco Habitat Management Plan, it could be implemented without wilderness restraints.	Same as entire WSA.
EAGLE PEAK									
(1) Entire WSA	Three oil and gas leases and numerous mining claims exist in the WSA. Portions of this WSA are within the Salt Lake coal field and are considered favorable for economic coal deposits. Marginal uranium mineralization believed to be present.	Watershed work will be developed to improve the critical erosion areas.	The WSA encompasses portions of four allotments.	WSA contains extensive pinyon-juniper woodlands suitable for fuelwood and fence posts. These woodlands contain an estimated 8,430 cords of standing greenwood.	Current use is limited to deer hunting. Opportunities exist for backpacking, hiking, camping, and photography.	Opportunities for archaeological and geological research.	No realty actions are planned.	A RMP proposed for the area would increase browse species and wildlife water sources.	Native American religious use at Zuni Salt Lake on the northern border of the WSA. No known religious use within WSA.
(2) Portion Recommended Suitable	N/A								
MESITA BLANCA									
(1) Entire WSA	One oil and gas lease in the WSA. WSA is on southern edge of Salt Lake coal field and is favorable for economic coal deposits. WSA is believed to contain marginal uranium mineralization.	Watershed work will be developed to improve the critical erosion areas.	The WSA encompasses portions of three allotments.	Scattered areas of pinyon-juniper offer potential for fuelwood and fence posts. WSA is estimated to contain 4,000 cords of standing greenwood.	Current recreation use is low. Red Hill Cinder Cone and Lava Flow are the primary recreational asset. Low deer populations provide marginal deer hunting opportunities.	Archaeological resources have been researched in the past and continue to offer outstanding opportunities for future research uses.	No realty actions are planned.	A RMP proposed for the area would increase browse species and wildlife water sources.	No known Native American uses.
(2) Portion Recommended Suitable	N/A								

TABLE 3-2 (CONCLUDED)
EXISTING AND POTENTIAL USES

WSA	Minerals	Watershed	Livestock Grazing	Vegetative Products	Recreation	Education/Research	Realty Actions	Wildlife	Native American Uses
ADEN LAVA FLOW									
(1) Entire WSA	Poor oil and gas potential. Geothermal resources presently not economically exploitable. Slab lava rock occurs in WSA, but is not presently economically exploitable.	Water use is primarily by livestock and wildlife. Located within the Lower Rio Grande declared underground water basin.	The WSA encompasses portions of two allotments. Four pipelines and troughs are proposed.	No current or potential uses.	Off-road vehicles, hunting, lava collecting, sightseeing.	Designated 4,008 acre Research Natural Area. Studies have been done on carnivores, bats, other mammals, melanistic species, and plant-soils relationships.	No realty actions are planned.	Two quail guzzlers are just outside the WSA.	No known Native American uses.
(2) Portion Recommended Unsuitable	N/A								
ALAMO HUECO MOUNTAINS									
(1) Entire WSA	Pediment and bolson area adjacent to mountains has good petroleum potential. Low potential for geothermal energy. Low non-energy minerals potential.	Water use is primarily by livestock and wildlife.	The WSA encompasses 2 portions of 1 allotment.	No current or potential uses.	Primitive recreation opportunities are limited because of land ownership patterns.	Potential for bighorn sheep or paleoenvironmental studies in dry caves.	No realty actions are planned.	No wildlife developments in the WSA at this time. Some water developments are planned in HMP. Protective stipulation for desert bighorn sheep for energy minerals leasing.	No known Native American uses.
(2) Portion Recommended Suitable	N/A								
BIG HATCHET MOUNTAINS									
(1) Entire WSA	Entire WSA is prospectively valuable for oil and gas. Best potential is in pediment and bolson areas adjacent to the steep mountainous portions of the range. Presently, subeconomic deposits of lead, zinc, silver, copper, gypsum, and cement-grade limestone.	Water use is primarily by livestock and wildlife. Part of the WSA is within the Playas Valley declared underground water basin.	The WSA encompasses portions of 3 allotments.	No current or potential uses.	Closed to hunting. Primitive recreational opportunities are outstanding.	Research on desert bighorn sheep. There is a potential for paleoenvironmental studies in dry caves.	A small unauthorized communication site is located on Big Hatchet Peak.	Protective stipulation for bighorn sheep for energy minerals leasing. Wildlife waters and mineral supplement stations primarily for the desert bighorn sheep. Sheep Habitat Management Plan.	No known Native American uses.
(2) Portion Recommended Suitable	Suitable area is outside area with best oil and gas potential. Non-energy minerals potential same as All Wilderness.	Same as entire WSA.	Encompasses portions of 3 allotments -- includes very small part of U-Bar allotment.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.
(3) Portion Recommended Unsuitable	Best oil and gas potential. Low non-energy minerals potential.	Same as entire WSA.	Encompasses most of U-Bar allotment and small portions of two other allotments.	Same as entire WSA.	Same as entire WSA.	Research on desert bighorn sheep.	No current or potential uses.	Portions covered by protective stipulation.	Same as entire WSA.
WEST POTRILLO MOUNTAINS AND MOUNT RILEY									
(1) Entire WSA	Best potential for oil and gas is along west pediment and in valley between the West Potrillo Mountains and Aden Lava Flow. Geothermal resources presently not economically exploitable. Cinders and slab lava rock occur in WSA. Existing cinder operation. Low potential for locatables.	Water use is primarily by livestock and wildlife. Located within the Lower Rio Grande declared underground water basin.	The WSA encompasses portions of 5 allotments. A pipeline is proposed.	Approximately 23,040 acres have been identified as a potential vegetation collection and sale area.	Recreational use includes off-road vehicles, sightseeing, rockhounding, hunting, and primitive recreation.	Possible floristic survey and cultural research.	Old Southern Pacific Railroad right-of-way forms major portion of the southern boundary of West Potrillo Mountains WSA.	There are no wildlife developments in the WSA.	No known Native American uses.
(2) Portion Recommended Suitable	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.
(3) Portion Recommended Unsuitable	Same as entire WSA.	Same as entire WSA.	Includes portions of 2 allotments.	No current or potential uses.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.	Same as entire WSA.

Source: BLM Albuquerque and Las Cruces District Wilderness Analysis Reports, 1983.

CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

Summary of Impacts

Table 4-1 includes a summary of the environmental consequences. Further discussion of environmental consequences are contained in the Wilderness Analysis Reports (WARs). The table includes only the significant impacts. If any of these areas are designated as wilderness, wilderness management plans will be prepared. These plans will provide the opportunity to incorporate measures designed to mitigate adverse environmental impacts.

Social and Economic Impacts

In addition to the impacts summarized on Table 4-1, there would be overall social and economic impacts which would apply to all areas discussed.

Wilderness designation would not have a significant impact on the population, income and employment for the counties that contain WSAs.

Local Attitudes and Perceptions

Wilderness designation would not change the general attitudes or values of local residents, but could affect specific attitudes toward the BLM, the Federal Government, and how some ranchers view the future of their operation.

Wilderness designation could affect impacted ranchers' expectations of being able to remain in the ranching business. Some ranch operators think that as a result of changing administrations, drastic changes in livestock numbers, or policy modifications that prevent rangeland developments, could be forthcoming in areas designated wilderness. Ranchers are also concerned about the changes in ranch loan and sale values that would occur as a result of wilderness designation. If designation occurs, many ranchers feel their operation would be less viable than it was before designation.

Economic Conditions

Designation of an area as wilderness could affect the manageability of some livestock operations. For example, the livestock operator could incur minor inconveniences due to vehicular restrictions within the designated wilderness.

Most ranch operators may need some borrowing of operating capital. In practice, a BLM grazing permit has value for borrowing money and adding value to the base property at the time of sale. The market value of an animal unit month (AUM) as of September 21, 1982 was approximately \$100 (Federal Land Bank 1982). Normally, when a loan is made, the Federal Land Bank will loan approximately 65-70 percent of the market value per AUM. Those portions of the grazing allotments within the wilderness boundary would have a loan value of approximately 50-60 percent of the AUM market value (Federal Land Bank 1982). Operators who may require additional operating capital for their operation would experience an unfavorable economic effect if a portion of their grazing allotment is within a designated wilderness area, since the loan value would be 10-15 percent less for those AUMs within the wilderness area than it is for AUMs outside the wilderness area.

TABLE 4-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternatives by WSA	Acreage	Minerals	Water, Soils, Vegetation	Wildlife	Visual	Cultural	Livestock Grazing	Recreation	Wilderness Values	Other
IGNACIO CHAVEZ										
All Wilderness	9,961	Elimination of the potential to develop a possible small coal mine.	The condition of existing resources would be maintained through limiting surface disturbing activities.	Restriction of surface disturbing activities would maintain existing habitat.	Existing resources would be maintained.	Would enhance scientific value of sites by preserving the natural environment context. Would result in reduction of vehicle based vandalism.	Possible limitations on maintenance of existing rangeland improvements and construction of new improvements. Approximately 4 miles of pipeline would not be constructed. Federal government would not spend approximately \$44,000 on new construction and allottees would not spend approximately \$1,575 annually on maintenance. Traditional use of the pickup truck would be limited. Existing AUMs of grazing would be retained.	Activities which require motorized activity would be limited. Primitive and unconfined recreation opportunities would be enhanced.	Wilderness values would be maintained.	Prevention of vehicular access could limit Native American uses. However, preservation of solitude and naturalness could enhance activities.
Amended Boundary	8,780	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.
No Action/No Wilderness	9,961	Mineral exploration and development could continue.	Possible reduced watershed quality. Soil and vegetation loss may occur.	A wider range of habitat management activities could occur, including development of wildlife waters and full implementation of Rio Puerco Habitat Management Plan.	Visual resources could be degraded through mineral exploration and development.	Adverse impacts from present levels of vandalism would continue. If mineral development occurs, this alteration would be accelerated.	No significant impact; however, if mineral development occurs, current authorized use could be reduced. Planned pipelines could be constructed. Use of pickup truck would not be limited.	If mineral development occurs, opportunities for primitive recreation would be reduced.	Wilderness character could be degraded or eliminated.	Natural settings on which Native American uses are often dependent could be subject to surface disturbing activities.
EAGLE PEAK										
All Wilderness	32,748	Potentially significant mineral development forgone due to WSA's high favorability for economic coal deposits and moderate favorability for uranium.	The condition of existing resources would be maintained. Structural and treatment measures would be restricted.	Existing habitat would be maintained.	The quality of existing resources would be maintained.	Would enhance scientific value of sites by preserving the natural environment context. Would result in reduction of vehicle based vandalism.	No impact to current levels of authorized use. Limitations on new rangeland developments and motorized access would not result in significant impacts.	No significant impact.	Would be maintained through wilderness management.	The harvest of approximately 8,430 cords of fuelwood would be forgone. Would preserve natural values in an area which surrounds a highly significant Native American Religious Site (Zuni Salt Lake).
No Action/No Wilderness	32,748	Development of coal and possibly other minerals would occur if economical deposits are found to exist.	Surface disturbance and vehicular use could reduce watershed quality. Structural and treatment measures would not be restricted.	Habitat disruption could result from mineral development.	Visual resources could be degraded through mineral exploration and development.	Adverse impacts from present levels of vandalism would continue. If mineral development occurs, this alteration would be accelerated.	No significant impact; however, if mineral development occurs, current authorized use could be reduced.	If mineral development occurs, opportunities for primitive recreation would be reduced.	Mineral exploration, continued vehicular access, and planned management actions, including livestock and wildlife waters, vegetation manipulation and fences would reduce the degree of naturalness and solitude. If mineral development occurs, it would result in a significant reduction of naturalness.	Approximately 8,430 cords of fuelwood would be available. Possible future mineral development would adversely affect Native American religious uses at Zuni Salt Lake.

TABLE 4-1 (CONTINUED)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternatives by WSA	Acres	Minerals	Water, Soils, Vegetation	Wildlife	Visual	Cultural	Livestock Grazing	Recreation	Wilderness Values	Other
MESITA BLANCA										
All Wilderness	16,429	Potentially significant mineral development forgone due to WSA's high favorability for economic coal deposits and moderate favorability for uranium.	The condition of existing resources would be maintained. Structural and treatment measures would be restricted.	Existing habitat would be maintained.	The quality of existing resources would be maintained.	Would enhance scientific value of sites by preserving the natural environmental context. Restrictions on vehicular access would probably reduce vandalism of sites.	No impact to current levels of authorized use. Limitations on new rangeland developments and motorized access would not result in significant impacts.	Activities which require motorized access would be restricted.	Would be maintained through wilderness management.	Harvest of approximately 4,000 cords of wood would be forgone.
No Action/No Wilderness	16,429	Development of coal and possibly other minerals would occur if economical deposits are found to exist.	Surface disturbance and vehicular use could reduce watershed quality. Structural and treatment measures would not be restricted.	Habitat disruption could result from mineral development.	Visual resources could be degraded through mineral exploration and development.	Gradual alteration of natural context of sites would result in reduction of scientific potential. If mineral development occurs, this alteration would be accelerated. Continued vehicular access would continue present nature of vandalism.	No significant impact; however, if mineral development occurs, current levels of authorized use could be reduced.	No significant impact.	Continued vehicular access, mineral exploration, and planned management actions, including livestock and wildlife waters, vegetation manipulation and fences would reduce the degree of naturalness and solitude. If mineral development occurs, it would result in a significant reduction in naturalness.	Approximately 4,000 cords of wood would be available.
ADEN LAVA FLOW										
All Wilderness	23,857	Minimal to moderate impacts to geothermal resources. Minimal impacts to non-energy minerals (slab lava rock).	Restrictions on surface disturbing and mechanized activities would provide long-term protection. Short-term impacts as a result of installation of proposed pipelines.	Existing habitat would be maintained.	Visual resources would be maintained.	No significant impacts.	No impact to current levels of authorized use. Not all proposed pipelines would be constructed. Impacts could result from restrictions on vehicular access.	Restrictions on vehicular access would impact present motorized recreation use patterns.	Wilderness values would be maintained.	
No Action/No Wilderness	23,857	No significant impacts.	Short-term impacts as a result of installation of proposed pipelines.	Some loss of wildlife habitat outside of RNA in areas where lava rock is extracted.	Degradation of visual resources could occur.	No significant impacts.	All proposed pipelines could be constructed. No impacts to livestock grazing.	Motorized recreation uses could benefit from improved access in the long-term.	Wilderness values could be degraded.	
ALAMO HUECO MOUNTAINS										
All Wilderness	10,796	Moderate impacts to energy and non-energy minerals.	The condition of existing resources would be maintained.	Wildlife habitat would be protected. Proposed developments to improve desert bighorn sheep habitat could be constructed with State Director approval.	Visual resources would be maintained.	Would enhance scientific value of sites by preserving the natural environmental context. Restrictions on vehicular access would probably reduce vandalism of sites.	No impacts to current levels of authorized use. Impacts could result from restrictions on vehicular access.	No significant impacts.	Wilderness values would have long-term Congressional protection. Due to the land status patterns in the Alamo Hueco Mountains, the Bureau could not manage the area as wilderness in the long-term.	
No Action/No Wilderness	10,796	Oil and gas exploration and development could occur within the constraints of the protective stipulation.	Loss of vegetation and soils in the long-term as a result of oil and gas exploration and development. Habitat for a Bureau sensitive plant species and a species of special concern could be significantly impacted.	Protective stipulation for desert bighorn sheep. HMP implemented without WMP constraints. Habitat for other species could be degraded by any type of development.	Visual resources could be degraded in the long-term.	Gradual alteration of natural context of sites would result in reduction of scientific potential. If mineral development occurs, this alteration would be accelerated. Continued vehicular access would continue present nature of vandalism.	No significant impacts.	No significant impacts.	Wilderness values would not be provided with long-term Congressional protection. Oil and gas activities could cause irrevocable degradation of wilderness values.	

TABLE 4-1 (CONCLUDED)
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternatives by Area	Acres	Minerals	Water, Soils, Vegetation	Wildlife	Visual	Cultural	Livestock Grazing	Recreation	Wilderness Values	Other
BIG BATHFET MOUNTAINS										
All Wilderness	58,014	Moderate impacts to oil and gas. Minimal impacts to non-energy minerals.	Restrictions on surface disturbing activities would provide long-term protection. Oil and gas exploration and development on state sections or on existing pre-APMA leases could result in a loss of vegetation and topsoil.	Restrictions on development would maintain wildlife habitat. Desert bighorn sheep and other species would be protected from human disturbance. Proposed developments to improve desert bighorn sheep habitat could be constructed with State Director approval.	Visual resources would be maintained.	No significant impacts.	No impacts to current levels of authorized grazing use. Impacts could result from the restriction on vehicular access.	No significant impacts.	Wilderness values would have long-term Congressional protection. Exploration and development of oil and gas around U-Bar Ridge could impact the naturalness of the area.	
Amended Boundary	41,293	Minimal impacts to oil and gas and non-energy minerals.	Same as All Wilderness. Most of the habitat for the Bureau sensitive plant species and 1 special concern element would be excluded from the area recommended suitable.	Important habitat for the desert bighorn sheep would be maintained.	Visual resources would be maintained on the 41,293 acres within the Amended Boundary.	No significant impacts.	No impacts. U-Bar allotment almost completely excluded.	No significant impacts.	Wilderness values would have long-term Congressional protection. Area could be managed as wilderness in the long-term.	
No Action/No Wilderness	58,014	Oil and gas exploration and development could occur within the constraints of the protective stipulation.	Significant loss of vegetation would occur along the pediments of the mountains, around U-Bar Ridge, and possibly in Sheridan Canyon as a result of oil and gas development.	Any mineral developments would degrade habitat. Increased human activity could impact wildlife.	Visual resources could be significantly degraded in the long-term.	No significant impacts.	No impacts.	Improved access as a result of oil and gas development could result in increased ORV activity.	No long-term Congressional protection. Management subject to administrative change in long-term. Oil and gas development would irrevocably degrade wilderness values.	
WEST POTRILLO MOUNTAINS/MOUNT RILEY										
All Wilderness	155,105	Minimal to moderate impacts to oil and gas and geothermal. Minimal impacts to non-energy minerals. Mineral material sales (cinders) would be forgone.	Restrictions on surface disturbing and mechanized activities would provide long-term protection. Slight temporary impact to vegetation as a result of installation of 2½ miles of pipeline. Significant loss of vegetation and soils would result from development of existing grandfathered cinder claims.	ORV limitation would maintain wildlife habitat. Development of grandfathered cinder claims would degrade wildlife habitat.	Visual resources would be maintained except in and around the existing grandfathered cinder claims.	Would enhance scientific value of sites by preserving the natural environmental context. Restrictions on vehicular access would probably reduce vandalism of sites.	No impact to present levels of authorized use. Impacts could result from restrictions on vehicular access on 72 miles of trails.	Present motorized recreation use patterns would be impacted as a result of restricted access.	Wilderness values would be protected by long-term Congressional designation. Cinder mining on existing grandfathered claims would degrade wilderness values in south-central part of West Potrillo Mountains WSA.	Collection and sale of vegetative products would be forgone.
Amended Boundary	147,100	Same as All Wilderness.	Same as All Wilderness with the following exception: the existing grandfathered cinder claims are excluded from the area recommended suitable.	Same as All Wilderness with the exception that the existing grandfathered cinder claims are excluded from the area recommended suitable.	Visual resources within the amended boundary would be protected.	Same as All Wilderness.	Same as All Wilderness.	Same as All Wilderness.	Wilderness values within the amended boundary would be protected by long-term Congressional designation.	Collection and sale of vegetative products would be foregone.
No Action/No Wilderness	155,105	Oil and gas exploration and development could occur.	Loss of vegetation and soils as a result of future exploration for oil and gas leases and development of existing grandfathered cinders claims.	Wildlife and habitat would be disturbed as a result of oil and gas exploration and development of grandfathered cinders claims.	Visual resources would be degraded in the long-term.	Gradual alteration of natural context of sites would result in reduction of scientific potential. If mineral development occurs, this alteration would be accelerated. Continued vehicular access would continue present nature of vandalism.	No impacts.	Motorized access could increase.	Wilderness values could be degraded in the long-term.	Collection and sale of vegetative products could occur.

CHAPTER 5

CONSULTATION AND COORDINATION

PURPOSE OF SCOPING

The Council on Environmental Quality (CEQ) Regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA) provide for an early and open process to determine the scope of issues to be addressed and to identify the significant issues related to the proposed alternatives. This process is termed "scoping" (43 CFR 1501.7). In addition, scoping requires the lead agency to inform and involve affected Federal, State and local agencies, Indian tribes and other interested persons. The process is designed to identify and emphasize the significant issues and eliminate those that are either not significant or have been covered by earlier environmental review.

SCOPING ACTIVITIES

To identify significant issues related to the wilderness study of WSAs in the Resource Areas, various Federal, State and local agencies, interest groups and individuals were contacted through correspondence, by telephone and in meetings. These meetings were also used to solicit resource information from the various publics for inclusion in the WARs and to explain the wilderness study procedures to be used.

The Resource Areas also reviewed and evaluated public comments received during the inventory phase (January 1979 - November 1980) of the wilderness review, and Resource Area specialists applied their professional judgment in analyzing issues.

Other consultation and coordination activities undertaken included field trips to specific WSAs with interested individuals and small groups and informal meetings or field trips with affected permittees. The documentation of specific public contacts for each WSA is contained in the Wilderness Permanent Documentation Files in the appropriate District Office.

In addition, an extensive mailing list has been assembled throughout the wilderness inventory and study process to ensure that all Federal, State and local agencies, interest groups and individuals are kept informed of the progress of the wilderness review.

SCOPING RESULTS

The scoping process identified the following general issues of concern for all of the WSAs covered in the supplemental EA.

There was concern that wilderness designation would reduce or eliminate grazing on public land within WSAs. There was also concern that restrictions on the use of motorized vehicles would limit the ability of ranchers to efficiently manage livestock or to repair reservoirs, fences and other livestock facilities. The local ranch public also expressed the fear that no new water sources or other rangeland improvements would be permitted in designated wilderness.

The possible elimination or reduction of opportunities to explore for or produce oil and gas and geothermal energy in areas of high potential was a major concern for the WSAs covered in the supplemental EA.

Under wilderness designation, concerns about economic impacts were expressed, including possible reductions in grazing income and reduced loan or resale value of ranches that have BLM grazing permits in WSAs. There was also concern that restrictions on mineral development would result in the loss of expenditures in the local economies.

Concerns were expressed about the quality of the wilderness resource.

In addition to the general issues listed above, specific issues were identified for each of the WSAs.

1. Ignacio Chavez WSA

Potential impacts on livestock grazing operations and potential mineral resources are the major issues associated with wilderness designation.

2 Eagle Peak WSA and Mesita Blanca WSA

Because of the distance from population centers and lack of familiarity by the public, little public interest has been demonstrated over these WSAs. Consequently, the issues and concerns have been identified primarily by BLM resource specialists.

Under wilderness, concerns exist over probable economic coal reserves, as well as possible manageability problems associated with access and possible coal mining in more than 1,100 acres of split-estate inholdings. Under No Wilderness, impacts to cultural resources, including possible Chacoan outliers, are a concern.

3. Aden Lava Flow WSA

The primary issue identified for this WSA was the quality of the area's wilderness values. Those favoring wilderness designation for the area state the area has high quality wilderness values, including ecological and geological supplemental values. Those opposed to wilderness designation felt the area's wilderness values were not of a high quality, especially opportunities for solitude which were described as less than outstanding due to the outside sights and sounds of the nearby Southern Pacific Railroad, Interstate 10 and low level training flights of military aircraft.

Aggregate minerals, oil and gas potential and geothermal energy potential were identified as possible resource conflicts.

4. Alamo Hueco Mountains WSA

Oil and gas potential and manageability were the primary issues identified for this WSA. The pediments of the Alamo Hueco Mountains and the surrounding flats have high oil and gas potential. The irregular shape of the WSA and land status patterns were identified as major manageability problems.

5. Big Hatchet Mountains WSA

Oil and gas potential and the effects of wilderness designation on management of the State endangered desert bighorn sheep were the primary issues identified for the Big Hatchet Mountains WSA. The WSA is potentially valuable for oil and gas reserves, especially along the pediments of the mountains, in the surrounding flats and around U-Bar Ridge. There was concern that wilderness designation would limit options for management of the desert bighorn sheep.

6. West Potrillo Mountains/Mount Riley WSA

The quality of wilderness values and manageability were the primary issues identified for these two WSAs. Those favoring wilderness designation for the areas stated that the areas have high quality wilderness values and noted that the area's large size, diverse topography, proximity to large population centers and dispersed access points contribute to the areas outstanding opportunities. Those opposed to wilderness designation listed roads, rangeland developments and vehicle trails as impacts on wilderness, and described opportunities for solitude as less than outstanding due to the outside sights and sounds of the nearby Southern Pacific Railroad, Interstate 10 and the low level training flights of military aircraft.

Manageability issues associated with wilderness designation included State land inholdings, a private subsurface mineral estate inholding, cinder mining activities and existing off-road vehicle use patterns. Also identified were possible conflicts associated with potential oil and gas and geothermal energy resources.

List of Preparers

A list of persons involved in the preparation of this supplemental Environmental Assessment (EA) is provided in Table 5.

TABLE 5

LIST OF PREPARERS

<u>Name</u>	<u>EA Responsibility</u>	<u>Education</u>	<u>Office</u>
Dan Wood	Co-Team Leader	BS Forestry	New Mexico State Office
Joe Sovcik	Co-Team Leader	BS Biology	New Mexico State Office
Jeff Jarvis	Summary Tables	BS Natural Res.	Las Cruces District
Donita Cotter	Scoping Summary	BS Environ. Sci.	Las Cruces District

This EA is primarily a summary of the WARs. The WARs were prepared by the specialists in the respective Resource Area and District Offices. A list of these preparers and contributors is available upon request.

SECRET

The Special Forces Group (SFG) is a highly trained and equipped unit of the United States Army. It is composed of soldiers who are selected for their exceptional physical and mental abilities. The SFG is trained to conduct a variety of operations, including reconnaissance, sabotage, and direct action. It is the only unit in the Army that is trained to operate in all environments, including urban, mountain, and jungle terrain.

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SECTION 1
GENERAL DESCRIPTION

APPENDIX A
IGNACIO CHAVEZ WSA
(NM-010-020)

LOCATION

The Ignacio Chavez Wilderness Study Area (WSA), NM-010-020 contains approximately 9,961 acres of public land. The WSA is bound on the north and west by public and private lands, on the south by the Ignacio Chavez Land Grant (public lands), and on the east by other public lands (refer to Map 2).

The Ignacio Chavez WSA is located approximately 6 miles west of the village of Guadalupe, New Mexico and 50 air miles northwest of Albuquerque. The WSA is also adjacent to the Empedrado and La Lena WSAs (refer to Map 2-A)..

The U.S. Geological Survey topographic maps that cover this 9,961-acre area are: Mesa Cortada, Cerro Parido and Guadalupe (7.5 minute quadrangles).

CLIMATE AND TOPOGRAPHY

The Ignacio Chavez WSA is situated on the physiographic boundary between the Navajo and Datil sections of the Colorado Plateau province. The Navajo section includes much of the northern part of the WSA and is characterized by outcrops of sub-horizontal sandstone with lesser amounts of shale that have been subjected to intensive arid-cycle erosion. Landforms common to this part of the WSA include mesas, cuestras, rock terraces, retreating escarpments, canyons and arroyos. These landforms are in striking contrast to the southern portion of the WSA, which is contained within the Datil section. Cenozoic age volcanism created most of the Datil section landforms, which include basalt plains, cinder cones, exhumed plugs and dikes and extensive talus slopes.

Relief varies throughout the WSA from low-relief mesa tops to high-relief escarpments along plateau edges. The highest elevation is approximately 7,731 feet at Bear's Mouth, while the lowest elevation (approximately 6,000 feet) is found near the Arroyo Chico drainage. Three principal landforms occur within the boundaries of the Ignacio Chavez WSA; these include: (1) the lava-covered surface of El Banquito Mesa, (2) the talus-covered slopes along the mesa edge, and (3) the incised cuesta topography that characterizes the remainder of the WSA (see Figures 1 and 2).

The WSA has a semiarid climate with pleasant summers and fairly long cold winters. The summer growing season rains account for approximately 65 percent of the total annual precipitation; 15 percent falling during April, May and June and 50 percent during July, August and September. During the summer, there are drought periods with interspaced torrential showers that cause rapid runoff on open slopes and flash floods in the valleys and arroyos. The winters are dry with most moisture being snow and some sleet and rain.

Average annual precipitation is approximately 11 inches. The amount and distribution of precipitation is extremely variable. A measurable amount of snow can be expected at any time between October 1 and April 30. The average snowfall is 37 inches.

The average growing season is approximately 153 days, beginning the end of March, or the first of April, with above average over-winter moisture and often extending into October.

Temperature is also variable. Extreme temperatures range from 102° F. in the summer to -20° F. in the winter. Average daily temperatures in the summer varies from 45° F. in April to 70° F. in July.

Westerly winds prevail in the winter but are affected by topography. The average velocity is 10 miles per hour and increases to 25 to 30 miles per hour during the spring windy season.

LAND STATUS

The Ignacio Chavez Wilderness Study Area consists of 9,961 acres of public land. There are no inholdings.

ACCESS

The Ignacio Chavez WSA can be reached by proceeding southwest off of state highway 44 onto state maintained gravelled roads which extend to the north, east, and west of the WSA.

MAP 2

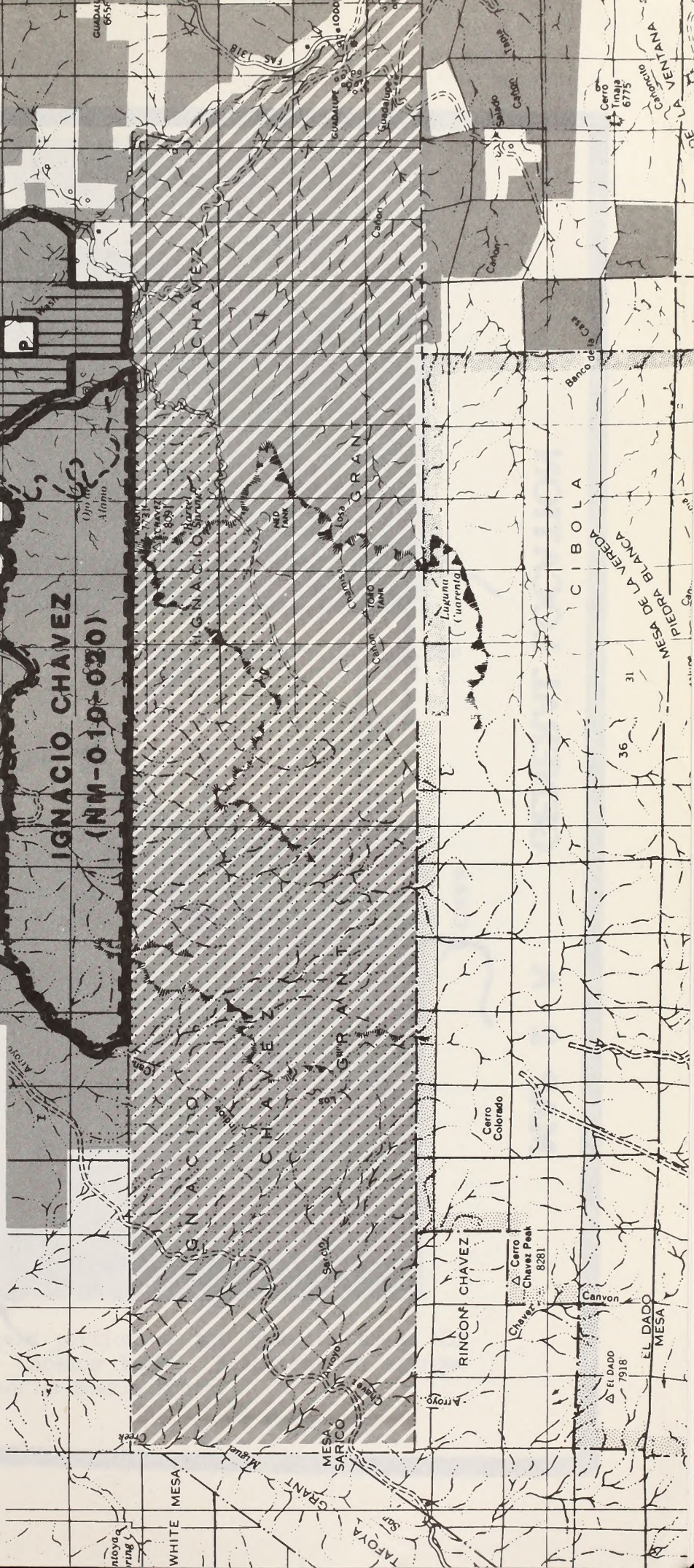
IGNACIO CHAVEZ WSA (NM 010-020)

- Legend**
- WSA BOUNDARY
 - AMENDED BOUNDARY
 - CONSIDERED FOR SPECIAL DESIGNATION
 - LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY
 - Land Status***
 - BLM
 - PRIVATE
 - STATE
 - BLM SURFACE/NON BLM SUBSURFACE

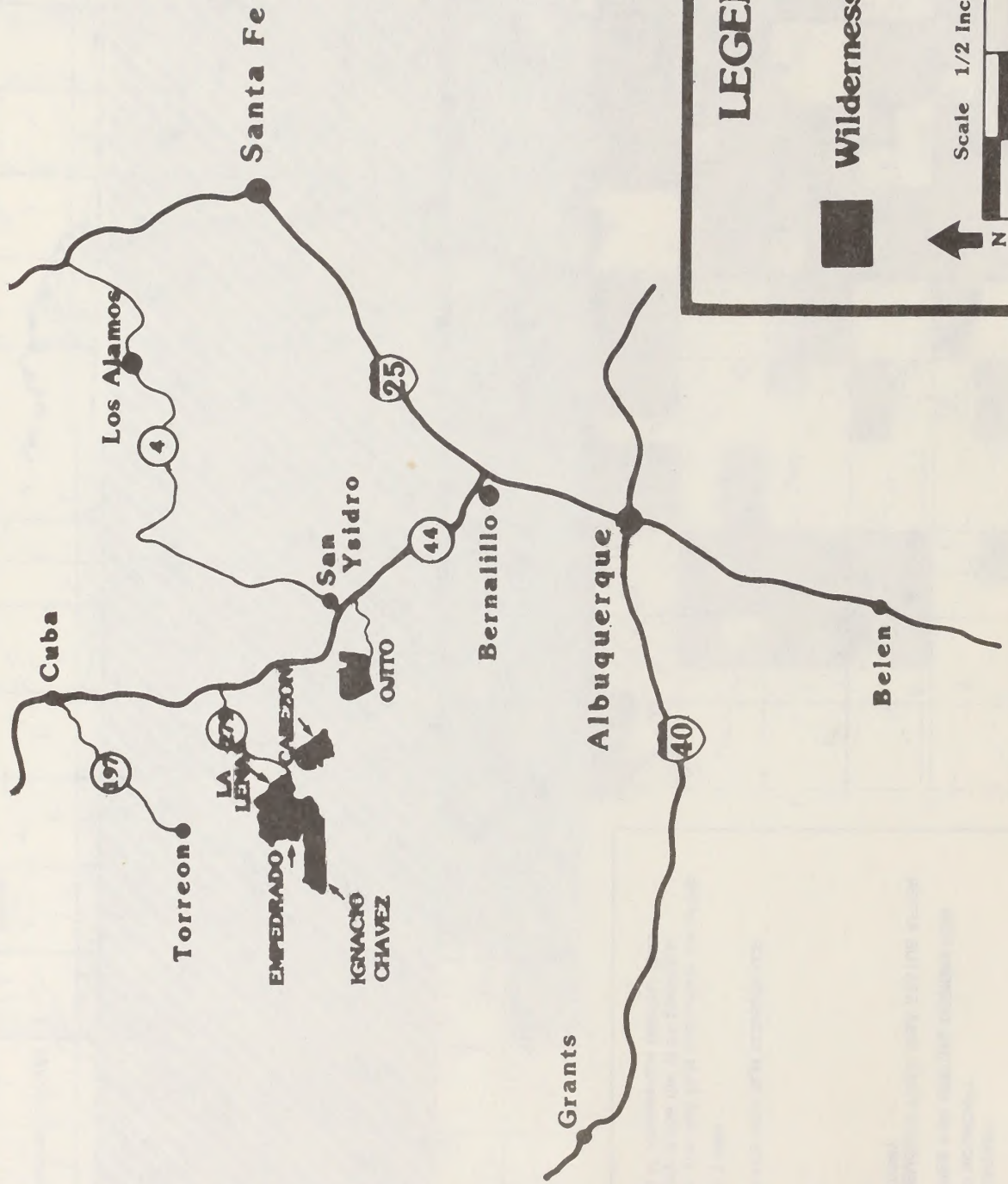
Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982



MAP 2 - A GENERAL LOCATION



LEGEND

Wilderness Study Area

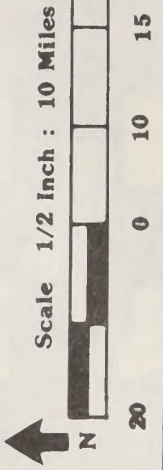




Figure 1. View of the landforms in the eastern part of the Ignacio Chavez WSA.



Figure 2. The southern portion of the Ignacio Chavez WSA looking east towards Cabezon Peak. Formation on extreme right of photo is known as Bear's Mouth.

SECTION 2

EXISTING RESOURCES

GEOLOGY

Structurally, the Ignacio Chavez WSA is relatively simple. There are few faults and only gentle folding (associated with the termination of the McCartys syncline). The sedimentary rocks of the WSA dips at a low angle to the northwest into the San Juan Basin. The WSA is situated on the southeastern margin of the basin, approximately on the boundary between the Chaco Slope and the Central Basin. In this region of relatively slight deformation and gentle dips, the subhorizontal volcanic and sedimentary rocks crop out in many small cliffs and several spectacular escarpments. (Refer to Figure 3.)

ENERGY AND MINERALS

Although some of the Ignacio Chavez WSA is dominated by basalt flows capping the top of the Cebolleta Plateau, a large part of the WSA's geology is characterized by a thick sequence of sedimentary rock outcrops. This sedimentary sequence contains rock that ranges in age from Pennsylvanian to Cretaceous and is known regionally to contain deposits of oil and gas, coal, uranium, copper, silver, limestone, gypsum, humate and clay. Table 3 is a list of the stratigraphic formations and minerals that occur in the sub-surface beneath the Ignacio Chavez WSA. (See Section 3, Existing and Potential Uses; Mineral Development).

PALEONTOLOGY

While the igneous rocks in the Ignacio Chavez WSA are non-fossiliferous, the remaining exposed sedimentary rocks are known regionally to contain a varied fossil assemblage. The Point Lookout Sandstone contains trace fossils and plant fragments, while the Menefee Formation also contains plant fragments and vertebrate material. The Mancos Shale represents deposition under fully marine conditions, and its fauna is dominated by molluscs.

WATER

Surface Water

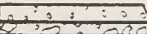

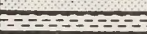
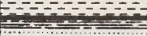

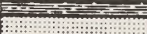
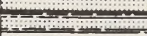











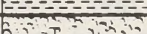
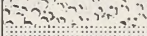


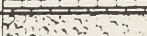
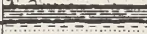





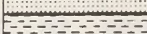
The WSA lies in a tributary watershed of the Rio Puerco which ultimately flows into the Rio Grande. It is considered a part of the Middle Rio Grande Major River Sub-basin.

Arroyos in the WSA are ephemeral. Runoff occurs at many times throughout the year, but volume mainly varies by season. Peaks commonly occur during the summer afternoon thundershower season from July through September, when tremendous volumes of runoff are generated. Comparison of rainfall data with discharge data for this season shows that up to 99 percent of the annual recorded discharge may occur during this three-month period, (Craig 1980).

Average annual water yields from the WSA fall between 0.1 and 0.5 inches (.25 inches average, or 2,645 acre-feet per year). El Banquito Mesa range from 1 to 3 inches annually.

Figure 3

Stratigraphic Section,
Cabezon, Chamisa, Empedrado,
Ignacio Chavez, La Lena, and Ojito Wilderness Study Areas

ERA	SYSTEM OR PERIOD	GROUP	FORMATION OR MEMBER		LITHOLOGY
CENOZOIC	QUATERNARY			ALLUVIUM	
	TERTIARY			PEDIMENT	
				SANTA FE	
	CRETACEOUS		MESAVERDE		PICTURED CLIFFS
				LEWIS	
				CLIFF HOUSE	
				MENEFEE	
				POINT LOOKOUT	
				CREVASSE CANYON	
				GALLUP	
				MANCOS	
				DAKOTA	
		JURASSIC		MORRISON FORMATION	
			WESTWATER CANYON		
			RECAPTURE		
	SAN RAFAEL			BLUFF	
				SUMMERVILLE	
				TODILTO	
			ENTRADA		
MESOZOIC	TRIASSIC	CHINLE FORMATION		UNNAMED SILTSTONE	
				PETRIFIED FOREST	
				POLEO SANDSTONE LENTIL	
				SALITRAL SHALE TONGUE	
				AGUA ZARCA	
PALLOZOIC	PERMIAN	MAGDALENA		SAN ANDRES	
				GLORIETA	
				YESO	
			ABO		
	PENNSYLVANIAN			MADERA	
PRI-CAMBRIAN	MISSISSIPPIAN		SANDIA		
	PRECAMBRIAN		ARROYO PENASCO		
			PRECAMBRIAN		

The WSA lies within the Rio Grande underground water basin. One developed spring (for livestock use), and two undeveloped springs exist in the WSA.

Ground water is usually not available at a reasonable depth except in the alluvium. The quality of this ground water ranges from fresh to moderately saline, but is usually marginal for domestic uses. Yields are usually very low (Craig 1980).

SOILS

Soils in the Ignacio Chavez WSA occur in three general categories: those developing on basalt at the higher, mesa top elevations under pinyon and ponderosa pine; soils on the steep, stony sideslopes; and those developing on sandstones and shales at the lower elevations (Refer Table 1).

Soil erosion and limitations on vegetation productivity are generally greatest on soils in the third category. Soils in the second category are generally stable due to the high content of stones and boulders; they have good vegetation production potential. The soils on the mesa tops of the Ignacio Chavez WSA have the most potential for high productivity because of favorable texture, depth, and precipitation.

VEGETATION

Table 2 summarizes the vegetation located in the Ignacio Chavez WSA as grouped according to range sites. Map 2-B displays the range sites with the present vegetation species as listed in Table 2. As shown on Map 2-B in range site 5 a majority of the 5,132 acres consists of blue grama, juniper and galleta grass. A range site is an area that is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or total production.

WILDLIFE

The Ignacio Chavez WSA is within one of the most diverse and productive wildlife habitat areas on BLM-administered lands in northwest New Mexico. Approximately 257 vertebrate species may inhabit the WSA, including 146 species of birds, 71 of mammals, 31 of reptiles, and 9 species of amphibians. (A complete list of these animals is located in Run Wild, the USDA Forest Service 1982 computer printout on file in the Albuquerque District Office.) The animals actually collected or sighted on the WSA are listed in Attachment 1.

The bald eagle and peregrine falcon are the only threatened or endangered species likely to occur in the WSA, although no reported sightings have been made.

The interspersed pinyon-juniper woodland, ponderosa pine with oak understory, and open grassland parks on the Ignacio Chavez WSA, along with the protection afforded by the steep slopes and cliffs of Mesa Chivato, provide potentially excellent habitat for many species of wildlife (see Figure 4). Although use of the WSA by threatened or endangered species is limited, the WSA



Figure 4. Wildlife habitat provided in the Ignacio Chavez WSA.

is important habitat for a large variety of wildlife, including at least six game species (mule deer, elk, Merriam's turkey, black bear, tassel-eared squirrel, and mourning dove).

Other wildlife common to the area include coyotes, badgers, porcupines, cottontails, Gunnison's prairie dog, Golden eagles, sharpshinned hawks, red-tailed hawks, Stellar's jays, pinyon jays, and gray-headed juncos.

TABLE 1
SOILS, IGNACIO CHAVEZ WSA

Unit ^{a/}	Soil Type	Percent Slope	Acres
Ak	Alkali Alluvial Land	0-5	643
Bc	Basalt Outcrop-Orthents-Ustolls Complex	3-30	6,709
Bf	Berent-Sandstone Outcrop Complex	1-25	56
Fs	Fruitland-Slickspots Association	0-5	121
Km	Kim Loam	3-8	529
Lt	Litle-Las Lucas-Persayo Association	1-25	144
Lu	Shingle Complex	3-25	19
Pf	Penistaja Fine Sandy Loam	0-5	96
Ph	Penistaja-Hagerman Association	2-5	63
Rt	Travessilla-Shingle-Rock Outcrop Complex	3-30	804
To	Torreón Loam	0-3	777

Note: ^{a/} Units correlate to soils map on file in the Rio Puerco Resource Area.

VISUAL RESOURCES

Expansive scenic vistas extend from El Banquito Mesa into the Cabezon, La Lena, Empedrado and Chamisa WSA's as well as the Nacimiento Mountain Range.

The BLM uses two systems to classify visual resources.

The BLM's 1971, Rio Puerco Planning Unit Resource Analysis utilized the Visual Resource Management (VRM) System, which categorized the WSA as VRM Class II (refer to Attachment 2 for explanation of the VRM classes).

TABLE 2

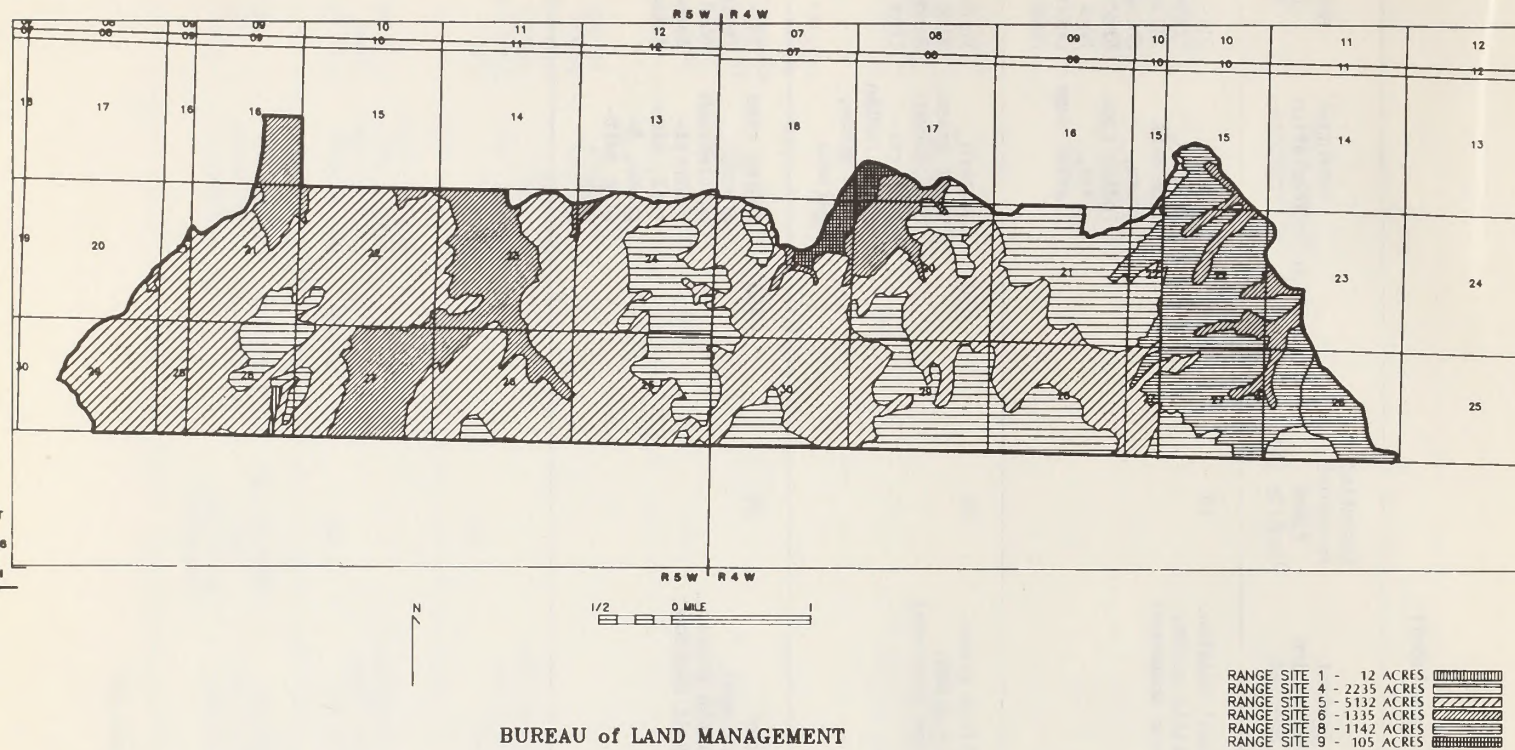
VEGETATION, IGNACIO CHAVEZ WSA

IGNACIO CHAVEZ

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
1	Pine-douglas fir	1	north/nearly flat	36	4.6	good	blue grama, galleta grass broom snakeweed	25	1,100	mt. muhley, Ariz fescue, needle and thread grass	150-un-named 5 loam
2	Pine-douglas fir	7	N, E, nearly flat	47	12.13	good	pinyon, Gambel's oak, ponderosa pine	28	1,113	Ariz. fescue, mt. muhley, prairie junegrass, ponderosa pine	101-Cabezon-Basalt Outcrop Association
3	Pine-douglas fir	26	N, E, aspect	38	13.87	fair-good	ponderosa pine (pp) Gambel's oak, mutton bluegrass	25	850	Ariz. fescue, mt. muhley, NM Outcrop mutton bluegrass	101-Cabezon-Basalt Outcrop Association
4	Juniper-pinyon	24	N and E aspect	28	10.96	poor-good	1-seed juniper, galleta grass blue grama	15	450	Alkali sacaton, blue grama, Indian rice grass, 1-seed juniper	100-Basalt Outcrop-Orthents-Ustolls Complex
5	Juniper-pinyon	18	N and W aspect	43	5.58	fair-good	blue grama, 1-seed juniper, galleta grass	20	450	Blue grama, black grama, NM feathergrass, Bottlebrush Squirreltail	100-Basalt Outcrop-Orthents-Ustolls Complex
6	Grama-galleta steppe	4	All aspects	18	6.39	poor-good	Alkali sacaton, galleta grass, blue grama	45	2,500	Vine mesquite, alkali sacaton, blue grama, 4-wing salt-bush	170-Klm Loam

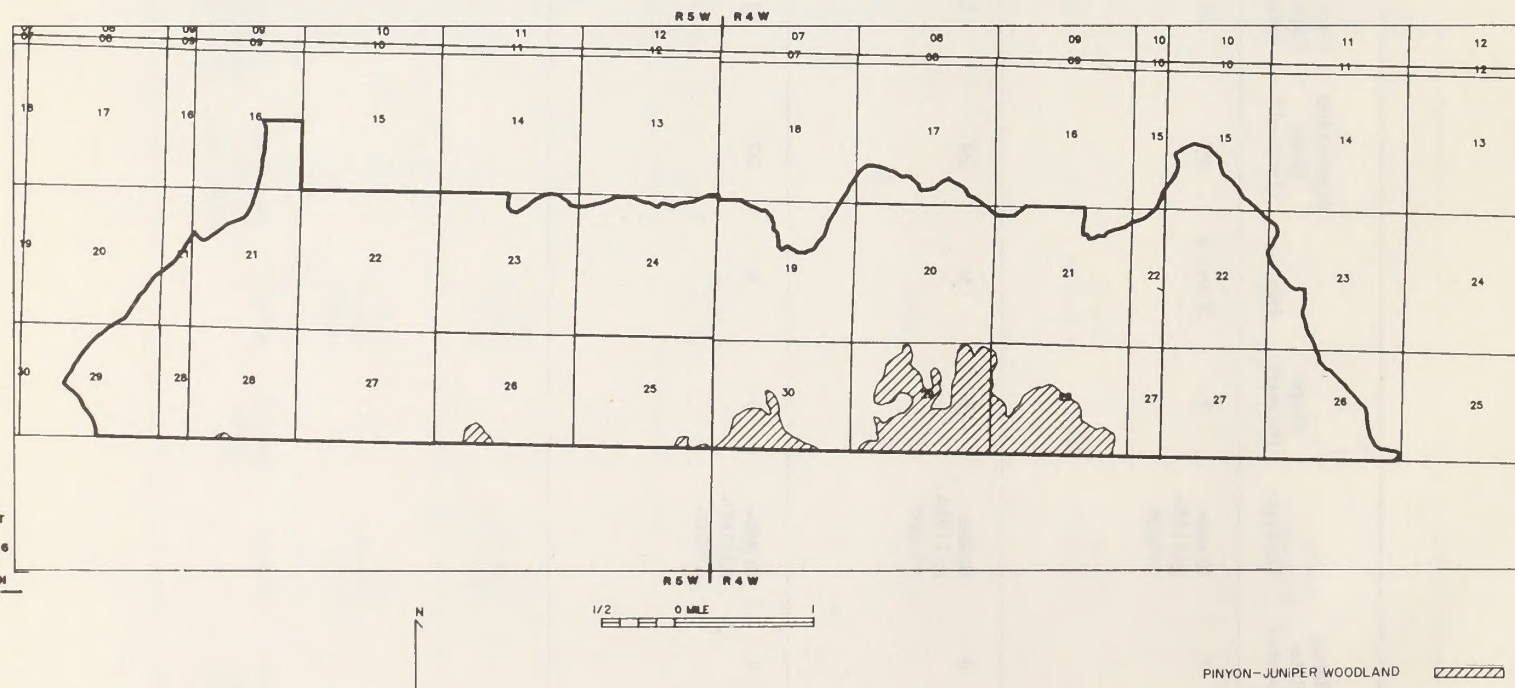
IGNACIO CHAVEZ TABLE 2 (concluded)

Range Site Number	Ecotype	Slope Percent	Aspect	Vegetative Cover (Percent)	Carrying Capacity Acres/AUM	Range Condition	Present Vegetation Species	Potential Perennial Plant Density (%)	Production (lbs/ac)	Potential Vegetation Species	Related Soil Type
7	Grama-galleta steppe	2	S and W	25	23.3	fair	Alkali sacaton, galleta grass, broom snakeweed	10	225-475	Alkali sacaton, side oats grama, Indian rice grass, Bigelow sage	011-Traves-silla-Shingle Eroded Rock Outcrop Complex
8	Grama-galleta steppe	3	N	24	8.57	fair	Galleta grass, blue grama, broom snakeweed	20	650	Western wheat grass, bottlebrush squirrel-tail, Indian rice grass, galleta	Penistaja Fine Sandy Loam
9	Grama-galleta steppe	5	N	22	11.20	fair	Broom snakeweed, galleta grass, Alkali sacaton	20	450	Indian rice grass, bottlebrush squirrel-tail, blue grama, 4-wing salt-bush	141-Penistaja Bond Association



MAP 2 - B

FOREST TYPES, IGNACIO CHAVEZ WSA



BUREAU of LAND MANAGEMENT

MAP 2 - C

The BLM used a Visual Resource Inventory in the Environmental Statement for the Proposed Rio Puerco Livestock Grazing Management Program (1978). Based on landform, color, water, vegetation, intrusions, and uniqueness, the WSA was given a Scenic Quality rating of Class A, a high Visual Sensitivity Level that lies in a foreground - middleground Visual Zone, (refer to Attachment 2).

Using these two systems, the BLM has rated the Ignacio Chavez WSA as having a high overall value for its visual resources.

CULTURAL RESOURCES

Although the cultural resource inventory within this WSA has been very limited, it suggests that at elevations exceeding 7,000 feet, there is little probability of encountering sites with architectural features. Two sites are currently recorded within the boundaries of this WSA. One is historic but of unknown date and one has no defined cultural or temporal affiliation.

Existing survey within this WSA indicates that while early man was not habitually living in this region at these altitudes, (in this area) he crossed them while traveling, hunting game, and obtaining vegetable foods and materials.

No PaleoIndian sites are known within the WSA or vicinity. Location patterns and probability of occurrence are virtually unknown.

No known Archaic sites exist within the WSA; however, Archaic populations have made extensive use of the middle Rio Puerco Valley, and it is reasonable to assume they made some use of the resources within the WSA.

No specific site location predictions can be made for Navajo sites within the WSA but ethnographic information on similar environmental settings (Black Mesa and Navajo Mountain) suggests that high mesa meadows have been preferred summer grazing locations.

AIR QUALITY

Ambient air quality monitoring data for the general area of the Ignacio Chavez WSA was collected during 1975-76 by the State of New Mexico Environmental Improvement Agency, Air Quality Division. Readings were all within the Class II standards established by the Clean Air Act (as amended, 1977) for BLM-administered lands.

FOREST PRODUCTS

The Ignacio Chavez WSA supports two forest types typical of the southwest, the ponderosa pine and the pinyon-juniper woodland (refer to Map 2-C).

Ponderosa Pine Type

Ponderosa pine exists in a few scattered tracts in the upper elevations of the WSA. These areas are considered marginal for their production.

Pinyon-Juniper (Woodland) Type

Juniper occupies the lower elevation sites near the sagebrush zone. The juniper trees near the sagebrush zone are mostly scrubby in nature and are currently of little importance as a forest product. Larger junipers exist with the pinyon at higher elevations and could yield fence posts or poles. Pinyon occupies the site between 5,200 and 8,200 feet in elevation.

SECTION 3

EXISTING AND POTENTIAL USES

MINERAL DEVELOPMENT

Only minor exploration and development has occurred on the WSA. Those lands north of the Ignacio Chavez Land Grant boundary are public and are underlain by BLM-administered minerals. As of August, 1982, 269 mining claims have been recorded and 10 oil and gas leases issued on public lands within the WSA boundaries. Some oil and gas exploration has occurred but no mining activity has occurred and the level of exploration activity has been low.

Table 3 represents a list of those minerals that are known or suspected to occur beneath the WSA. The highest potential for development is associated with coal and humates, which occur in the Mesaverde Group. The geologic environment, the inferred geologic processes, the reported mineral occurrences and known mines or deposits indicate a high favorability for the presence of these mineral resources. A successful exploration program could lead to the development of a small surface or underground mine. All of the other listed minerals have only a low to moderate potential for development.

WATERSHED

The cyclic erosion that occurred on the Ignacio Chavez WSA for several million years has had a major effect on the ecosystem. The most recent period of erosion, beginning in the late 19th century, has adversely affected agricultural economics in this WSA. A major change in the natural vegetation of the rangelands in the WSA has occurred during the past 100 years. Deterioration of the lands in the region of the WSA was observed by explorers in the mid-nineteenth century. The increased erosiveness of runoff that resulted from depletion of natural vegetation by overgrazing, coupled with a climatic drought, was responsible for arroyos cutting in the WSA (Elliott 1979).

LIVESTOCK GRAZING

The Ignacio Chavez WSA includes parts of three grazing allotments within its boundaries (refer to Map 2-D). Table 4 displays current grazing information pertaining to these three allotments.

TABLE 3

MINERAL RESOURCE ASSESSMENT FOR THE IGNACIO CHAVEZ WSA

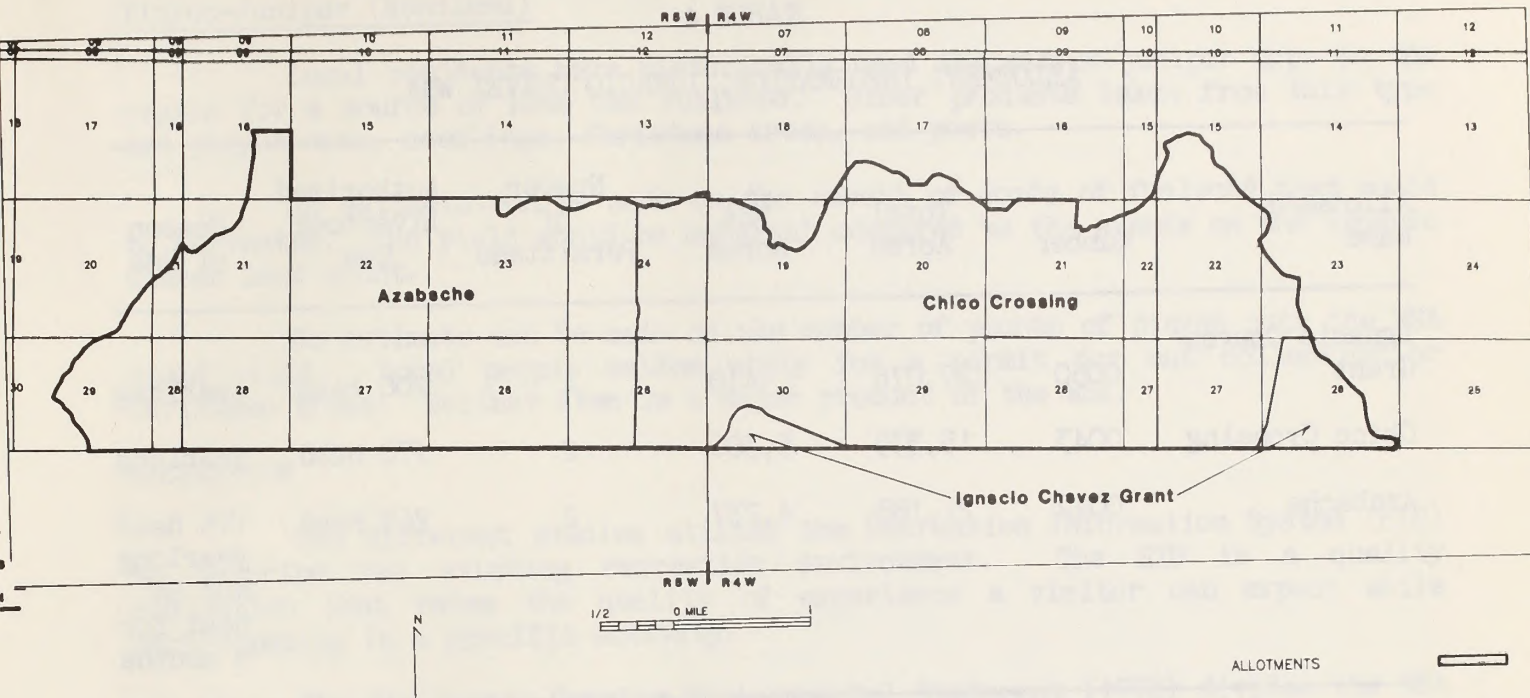
Mineral Commodity	Geologic Unit	Development Potential
<u>Locatables</u>		
Uranium and Thorium	Abo Formation	---
	Morrison Formation	3-B
	Dakota Formation	---
	Point Lookout Formation	---
Metals (Copper, Silver Molybdenum and Gold)	Agua Zarca Mb.	2-B
	Abo Formation	2-B
	Madera Formation	2-B
Non-metallics (Gypsum)	Todilto Formation	3-A
<u>Leasables</u>		
Oil and Gas	Sandia Formation	3-C
	Entrada Formation	3-C
	Dakota Formation	3-C
	Mancos Formation	3-C
	Mesaverde Group	3-C
Geothermal	No Specific Geologic Unit	2-B
Sodium and Potassium	No Specific Geologic Unit	2-A
Coal	Mesaverde Group	4-C
Bituminous Rock	No Specific Geologic Unit	2-C
<u>Salables</u>		
Sand and Gravel	No Specific Geologic Unit	3-C
Clay (Common Varieties)	No Specific Geologic Unit	3-A
Humates	Mesaverde Group	4-C
Petrified Wood	Mesaverde Group	2-A
Cinders	No Specific Geologic Unit	3-C

A - Insufficient Data; B - Indirect Evidence; C - Direct Evidence
D - Abundant Direct and Indirect Evidence

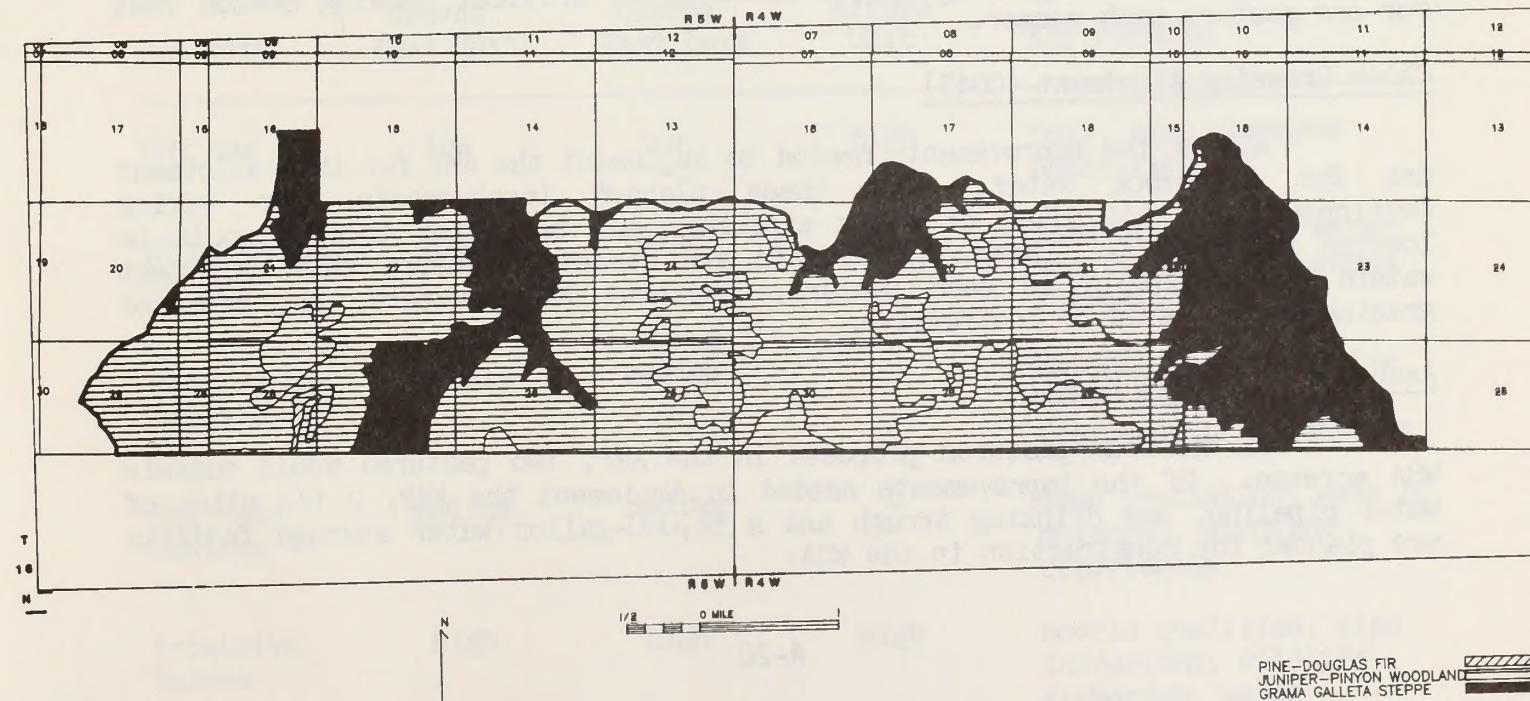
- 1 - The geologic environment and the inferred geologic processes do not indicate favorability for accumulation of mineral resources.
- 2 - The geologic environment and the inferred geologic processes indicate low favorability for accumulation of mineral resources.
- 3 - The geologic environment, the inferred geologic processes, and the reported mineral occurrences indicate moderate favorability for accumulation of mineral resources.
- 4 - The geologic environment, the inferred geologic processes, the reported mineral occurrences, and the known mines or deposits indicate high favorability for accumulation of mineral resources.

Adapted from GEM Study and Turner, BLM, 1982.

RANGE ALLOTMENTS, IGNACIO CHAVEZ WSA



ECOTYPES, IGNACIO CHAVEZ WSA



BUREAU of LAND MANAGEMENT

MAP 2 - E

TABLE 4

ALLOTMENT INFORMATION, IGNACIO CHAVEZ WSA

Allotment Name	Number	Total Acres	WSA Acres	Number of Permittees	Authorized Livestock Use	Season of Use
Ignacio Chavez Grant	0050	27,076	418	4	200 head	yearlong
Chico Crossing	0043	15,339	5,306	2	170 head	yearlong
Azabache	0042	21,188	4,237	2	269 head	175 head yearlong and 94 head for 8 months

Ignacio Chavez Grant Allotment (0050)

This allotment has a BLM Allotment Management Plan (AMP) that is not fully implemented. No range improvements are planned for construction in the WSA. Upon implementation of the AMP, the Guadalupe Allotment with one permittee will be added to Ignacio Chavez Grant Allotment. This allotment combination was proposed to facilitate a rest-rotation grazing system on these two allotments. The combination would increase the number of livestock that graze this WSA from 150 to 200 head. However, the length of time that the WSA would be grazed would be decreased, and the grazing system would allow critical growing season rest for one pasture each summer.

Chico Crossing Allotment (0043)

All of the improvements needed to implement the AMP for this allotment are for livestock water. Of these planned improvements, two spring developments, 1 1/4 miles of water pipeline, and two water troughs would be located in the WSA. These improvements are needed to ensure that permanent waters are available in each pasture. Without these waters, the proposed grazing system would be ineffective.

Azabache Allotment (0042)

Of the four pastures proposed in the AMP, two pastures would contain WSA acreage. Of the improvements needed to implement the AMP, 2 1/2 miles of water pipeline, one drinking trough and a 36,000-gallon water storage facility are planned for construction in the WSA.

FOREST PRODUCTS

Pinyon-Juniper (Woodland)

Local residents have historically used the pinyon-juniper type in the region for a source of home use fuelwood. Other products taken from this type are pinyon nuts, seedlings, Christmas trees, and posts.

No estimate can be made on the amount of cords of fuelwood that could be harvested. The yield would be marginal compared to the stands on the Ignacio Chavez Land Grant.

No estimate can be made on the number of pounds of pinyon nuts the WSA could yield. Local people seldom apply for a permit for nut collection or Christmas trees. Neither item is a major product of the WSA.

RECREATION

Two different studies utilize the Recreation Information System (RIS) to describe the existing recreation environment. The RIS is a quality evaluation that rates the quality of experience a visitor can expect while participating in a specific activity.

The Rio Puerco Grazing Environmental Statement (1978) divides the WSA into three RIS units. Each unit was given a quality rating for a number of activities according to key quality factors (refer to Table 5).

TABLE 5

RECREATION QUALITY EVALUATION, IGNACIO CHAVEZ WSA

Activity	Ignacio Chavez West Unit	Ignacio Chavez East Unit	Chico Arroyo Unit	Key Factors
ORV use	low	low	high	Soil, size, hazards usability
Sightseeing Scenery	high	high	medium	Landform, color, water vegetation, uniqueness intrusions
Sightseeing Geological	medium	medium	-	Extent, representative type, form, color, frequency of occurrence
Big Game Hunting	medium	medium	-	Game population, ease of movement, shooting opportunity
Primitive Values	high	high	high	scenic qualities, size intrusions, wildlife fisheries, water usability, uniqueness

This study utilizes the RIS to describe the existing recreation environment. It indicates that the WSA contains high primitive and sightseeing values and that the diverse range of terrain, vegetation and environmental transitional zones greatly enhance recreation opportunities within the WSA.

The WSA lies within New Mexico State Planning District 3. Recreation demand in this District is indicated in a study completed by the University of New Mexico's Bureau of Business and Economic Research (1975). Non-developed recreation demand on a regional level is an indicator of the types of activities that an area like the WSA could support. (Refer to Table 6). The data is useful for relative comparison purposes as it enables the reader to grasp a general picture of recreation use levels in the area. As presently proposed, the Continental Divide National Scenic Trail would cross the eastern third of the WSA.

EDUCATION/RESEARCH

The variety of ecosystems located within Ignacio Chavez provide an exceptional opportunity to utilize a "living laboratory" where natural systems can be observed. This diversity includes rolling grasslands, foothills, steep mesa slopes, canyons and several mesa tops. Each type supports its own characteristic vegetation and wildlife. How these different zones blend and complement one another's survival is as important to education/research goals as is the study of each zone singularly.

NATIVE AMERICAN USES

Native Americans (particularly nearby Navajo, Jemez, Zia and Santa Ana peoples) have traditionally used the area for firewood gathering and hunting. Some use continues presently.

Cerro Parido and Azabache Mesa are traditional snake and eagle catching areas. El Banquito Mesa is actively used by members of Zia Pueblo for prairie dog hunting and is a prime area for their projectile point and fetish collecting.

Recent survey and interviews with officials of Santa Ana, Laguna and Acoma Pueblos and the Canyoncito Navajo Reservation show that many places of religious significance exist in and near this WSA but that specific site locations are not known to the lay members of these tribes because only tribal elders know of and watch over such sites. Apparently it would be indiscreet for the secular governments to propose a survey or to provide any information of such an esoteric nature. Traditional uses within the boundaries of this WSA by Native American Populations are expected to continue.

WILDLIFE

The WSA is within the boundaries of the upper Rio Puerco Habitat Management Plan, a cooperative effort between the BLM and the New Mexico Department of Game and Fish. The following wildlife and habitat problems on the Ignacio Chavez WSA were identified in the plan. (BLM and NMDGF 1974, BLM 1981):

1. Low browse density and poor browse condition exist due to past heavy use by livestock and wildlife.

TABLE 6

REGIONAL RECREATION DEMAND
(based on visitor use days)

Activity	1975	1980	1985	1990
Pleasure Walking	7,487,332	8,448,000	9,209,000	10,002,000
Jogging	4,256,140	4,802,000	5,235,000	5,686,000
Park Visits	1,945,664	2,190,000	2,388,000	2,593,000
Birdwatching	1,394,103	1,573,000	1,714,000	1,862,000
Horseback Riding	1,249,915	1,410,000	1,538,000	1,669,000
Photography/Painting	1,051,006	1,186,000	1,293,000	1,404,000
Sightseeing	925,059	1,043,000	1,138,000	1,236,000
Picnicking	786,083	887,000	967,000	1,050,000
Hiking	427,351	482,000	526,000	571,000
Rock Hounding	424,745	479,000	522,000	567,000
Visiting Historical Sites	422,573	477,000	520,000	564,000
Camping	394,444	445,000	485,000	527,000
Small Game Hunting	247,551	279,000	304,000	331,000
Rock Climbing	138,541	156,000	170,000	185,000
Backpacking	111,180	125,000	137,000	148,000
Big Game Hunting	98,151	111,000	121,000	131,000
Cross Country Skiing	33,875	38,000	42,000	45,000

Source: University of New Mexico, Bureau of Business and Economic Research, 1975.

2. Poor quality forage species exist in open parks due to past livestock abuse.
3. Water distribution is poor.

BLM proposals for mitigating these problems include:

1. Prescribed burning to reduce pinyon-juniper invasion and forest litter, and to stimulate expansion of browse, cool-season grasses, ponderosa pine, and (in some cases) aspen.
2. Development and maintenance of one spring on the slope of Mesa Chivato.

The WSA provides about 1,500 hunter days, primarily big game hunting. This does include some game bird and varmint hunting however. Average deer hunter success is about 10 percent each year in the Mount Taylor Management Unit of which the WSA is a part (NMDGF 1981).

SECTION 4

WILDERNESS CRITERIA

EVALUATION OF WILDERNESS VALUES

Quality of Mandatory Wilderness Characteristics

Naturalness

A detailed description of the imprints of man's work is documented in the wilderness intensive inventory (USDI, BLM 1979). In summary, man made intrusions include a fenceline network, 6 earthen dams, 3 drill pads, and 10 two-track vehicular routes. The BLM considers the overall effects of these imprints upon the entire WSA when assessing naturalness. This is a function of the size of the unit and the number and distribution of the impacts. Tremendous variation in terrain, environmental transitional zones, and vegetation provide the user with a wide variety of opportunities to experience high quality primitive and undeveloped type of recreation. (Refer to Section 3, Existing and Potential Uses).

Opportunities for Solitude

The BLM considers solitude as the state of being alone or removed from habitations, isolation.

Two mesas, three large canyons, two volcanic plugs, spectacular escarpments, and numerous arroyos, washes, and smaller canyons provide expansive topographic diversity. This diversity protects against a particular attraction drawing large numbers of visitors, thus supporting dispersed use and enhancing solitude. Ignacio Chavez also displays generous vegetative screening. Overall, this WSA possesses outstanding opportunities for a user to experience solitude.

Opportunities for Primitive and Unconfined Recreation

The BLM considers primitive and unconfined recreation as the potential a WSA has to provide opportunities for a diversity of possible activities, or one activity of outstanding quality. This WSA contains abundant opportunities for a variety of quality primitive recreation experiences.

Backpacking, hiking, and general camping are considered excellent on the mesas because of level terrain. Sightseeing opportunities are plentiful anywhere along the rims of Chivato, Cortada, La Azabache, and El Banquito mesas. Sightseeing related to historical, geological, botanical, archeological, and geological values; big and small game hunting; horseback riding; birdwatching; and photographic possibilities exist throughout the WSA. Tremendous variation in terrain, environmental transitional zones, and vegetation provide the user with a wide variety of opportunities to experience high quality primitive and undeveloped type of recreation. (Refer to Section 3, Existing and Potential Uses).

Special Features

Visual appeal and the diversity of land forms and vegetation are perhaps the most outstanding special features of the Ignacio Chavez WSA. The rising green slopes and mesa tops contrast sharply with the arid desert lands to the north, east, and west. (Refer to Section 2, Existing Resources; Visual and Section 3, Existing and Potential Uses; Education/Research.)

Special wildlife features include one prairie dog colony. It provides an excellent opportunity for wildlife observers, and sightseers to observe these interesting creatures. In addition, prairie dog towns are known for their importance as habitat for other wildlife such as burrowing owls and cottontails. Prairie dogs are also important natural "tillers". By bringing new soil to the surface, they increase the water holding capacity of the soil, and retard erosion.

A flock of Merriam's turkey, and migrating herds of mule deer and elk also utilize the WSA. The faunal diversity in the WSA is a function of the integration of the ecotypes and produces a diverse and productive wildlife habitat. The Ignacio Chavez WSA is within one of the most diverse and productive wildlife habitat areas on BLM-administered lands in northwest New Mexico. (Refer to Section 2, Existing Resources, Wildlife.)

The WSA feature sites of Indian, Spanish and Anglo origin that may contain information needed to help piece together the history of this region.

Multiple Resource Benefits

Ignacio Chavez contains a wealth of natural values as a result of its relatively undisturbed character. Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these natural values than would the administrative designations available to the Bureau.

A more detailed discussion of multiple resource benefits may be found under the impacts section of the All Wilderness Alternative located in section 6 below.

Diversity in the National Wilderness Preservation System

Ecosystems Present

The Ignacio Chavez WSA, according to Robert G. Bailey (1980) falls under the Dry Domain in the Highland Province and the Colorado Plateau Sub-Province. This sub-province can be further subdivided into the Grama-Galleta Steppe and Juniper-Pinyon Woodland Mosaic.

The three A.W. Kuchler types (1964) found in the WSA are described from the lowest to the highest in elevation include:

Gramma-Galleta Steppe (47). Total acres in WSA 2,582; 26 percent of the WSA.

Juniper-Pinyon Woodland (21). Total acres in WSA 7,367; 74 percent of the WSA.

Pine-Douglas Fir Forest (17). Total acres in WSA 12; .1 percent of the WSA.

Refer to Section 2 of this document (Existing Resources, Vegetation) for a more detailed description of the ecosystems within the Ignacio Chavez WSA).

Map 2-E displays these ecosystems. Vegetation Map 2-B, breaks each ecosystem into more refined site categories which are narrated in Table 2 (Vegetation-Ignacio Chavez WSA) located in Section 2, Existing Resources; Vegetation.

Distance to Population Centers

The Ignacio Chavez WSA is within one day's drive (5 hours) of Bernalillo County and part of Sandoval County, which have been identified in the 1980 census as being a Standard Metropolitan Statistical Area (USDC, BC 1981). It is within a two and a half hour drive from the cities of Albuquerque and Santa Fe. (Refer to Map 2-A.)

MANAGEABILITY

To be recommended as suitable, Ignacio Chavez WSA must be capable of being effectively managed as wilderness. To determine manageability, the BLM must consider such factors as private inholdings, State lands, valid existing rights, mineral leases, rights-of-way, topography and the overall land status pattern.

Valid existing rights in Ignacio Chavez are accorded the livestock operators and include necessary access to maintain such items as "grandfathered" range improvements.

Several boundary modifications would enhance the manageability of the Ignacio Chavez. (Refer to Map 2.)

Modification 1 (T. 16 N., R. 5 W., Section 16) would drop 90 acres, which awkwardly protrudes to the north, and is contiguous on the east, with private land and on the north, with Indian land.

Modification 2 (T. 16 N., R. 4 W., Sections 15, 21, 22, 23, 26 and 27) would delete 1,091 acres which contain large retention dams. These have been reassessed as being significant imprints of man, thus impacting the naturalness of the WSA.

Overall, the Ignacio Chavez WSA is an exceptionally manageable unit. Its large size, lack of inholdings, and readily definable boundaries lend itself to effective management for the long-term preservation of its wilderness character.

SECTION 5

PUBLIC INVOLVEMENT OVERVIEW

A full public involvement effort was made during the wilderness inventory and WSA designation phases of wilderness analysis. The public response summary for the intensive inventory of the Ignacio Chavez WSA is located in Attachment 3. In arriving at a decision on this WSA's wilderness suitability, the BLM will use all public input generated thus far, along with comments received during the remainder of the environmental process.

To date, proponents of wilderness designation have cited the Ignacio Chavez' wide ecosystem diversity, large size, and apparent natural character. Its close proximity to the cities of Albuquerque and Santa Fe and thus its ability to serve such a large portion of New Mexico's population, has also been pointed out.

Opponents of wilderness designation for Ignacio Chavez discuss the effects of excluding the area from possible future mineral exploration and development, the presence of human impacts, possible limitations on ranch operations, and loss of potential fuelwood sites.

SECTION 6

ALTERNATIVES AND IMPACTS

This section will discuss three alternatives for Ignacio Chavez WSA; all wilderness, amended boundaries, and no action (manage under the existing plan).

Under this alternative, the entire 9,961 acres of public land within the Ignacio Chavez WSA would be recommended as suitable for wilderness designation.

On any acreage designated as wilderness, the existing and potential uses (refer to Section 3) would be regulated by the Wilderness Management Policy (1981).

ALL WILDERNESS ALTERNATIVE

This alternative would not have significant impacts on air quality or realty actions in the Ignacio Chavez WSA. For this reason, they are not included in the following discussions.

Impacts To Minerals

Locatable mineral development on the WSA would be affected because mining claims could not be located after January 1, 1984, and operations conducted after December 31, 1983, may include only development work, extraction and patenting.

Discretionary leasing and mineral material sales would most probably cease after wilderness designation; only those leases in effect prior to designation would be allowed to continue. Effective January 1, 1984, all of the minerals under lands designated as wilderness would be withdrawn from disposition under all laws pertaining to mineral leasing.

The net effect of these restrictions would be to significantly lower the potential for development of all locatable and leasable minerals that occur under the WSA. Although there is a moderate favorability for the occurrence of uranium, thorium, gypsum, oil, gas and coal, wilderness designation could curtail exploration and prevent possible future extraction.

Given today's economic conditions, there is little demand for the extraction of uranium, or thorium, from the WSA's reserves. Extensive coal reserves northwest of the WSA have been identified in the San Juan Basin. At best, with favorable economic conditions, a successful exploration program could lead to the development of a small surface or underground coal mine. [If Ignacio Chavez WSA is recommended suitable for wilderness designation, additional surveys will be done by the United States Geologic Survey (USGS) and the Bureau of Mines (BM)].

Impacts To Other Resources and Uses

Soils, Watershed and Vegetation

Restrictions on surface disturbing and mechanized activities would provide long term protection for the existing watershed soils and vegetation.

Wildlife

Restrictions on surface disturbing activities and mechanized activities would provide protection for wildlife habitat. Reduced vehicle access should reduce both legal and illegal furbearer harvest.

Restraints on methods of animal damage control and construction of fence enclosures could occur. Water development associated with the proposed pipeline would most likely not occur, which could preclude the expansion of the existing wildlife resource. (Refer to Section 3, Existing and Potential Use).

Visual Resources

Existing visual resources described in Section 2, would be protected; only minor modifications in the basic elements of the landscape may occur as a result of natural ecological changes and very limited management activity would be permitted.

Cultural

Site condition monitoring associated with surveillance could prove beneficial because over 80 percent of the Rio Puerco Resource Area's known sites suffer from significant natural deterioration. It is assumed that enhanced monitoring would take place under wilderness designation. This would increase the ability to detect, and if warranted, to arrest serious deterioration at relatively early stages.

The wilderness management policy allows the natural decay of sites. Excavation and stabilization may be allowed on a case-by-case basis where the State Director determines that the project would not degrade the over all wilderness character and when such activity was needed to preserve the particular cultural resource.

The increased public awareness of wilderness and thus the potential for increased visitation could increase vandalism if proper visitor management tools are not employed.

Limited surface-disturbing activities would be allowed under wilderness designation. This could limit the destruction of Ignacio Chavez's cultural sites through other than natural causes.

Livestock operations in the Ignacio Chavez WSA would be impacted by wilderness designation. These effects may result from limitations imposed on the maintenance of existing range developments and the construction of some proposed range improvements (refer to Section 3, Existing and Potential Uses). Although grazing is a permissible and compatible activity under wilderness designation, limitations on vehicular access, type of construction materials, or location of improvements may occur in order to protect wilderness characteristics. The planned pipeline system and related improvements within Ignacio Chavez WSA would not likely be constructed. This would eliminate additional AUMs as presently proposed. The federal government would not spend \$44,000 putting in the pipeline, and the allottees would not be responsible for approximately \$1,575 of annual maintenance.

A major impact to these allottees holding permits in the Ignacio Chavez WSA could occur because of limitations on the use of motorized vehicles in designated wilderness areas. Most of the ranchers graze livestock in the WSA ranch as a second income or to continue family tradition; ranching is not their primary source of income. These ranchers live in the vicinity of Cuba and Albuquerque, near their primary sources of income.

Therefore, the weekends are the time when most of the ranchers can attend to their grazing allotments, and the pickup truck has become increasingly important as a livestock management tool. Wilderness designation would hinder the effective use of already limited time to tend to weekend ranching operations.

The WSA presently supports approximately 985 AUMs; these existing levels of livestock operations as well as necessary vehicular access and the maintenance of "grandfathered" range improvements are valid existing rights and would continue under wilderness.

Forest Products

The utilization of a small fuelwood source would be precluded.

Recreation

Developed recreation opportunities and recreation activities that require motorized vehicles would be affected, including some hunting. Primitive and unconfined recreation opportunities, of which there is a high demand regionally, would be preserved. This includes preservation of a natural setting that would support the Continental Divide National Scenic Trail. (Refer to Section 3, Existing and Potential Uses). Although these opportunities do exist outside of the WSA, Ignacio Chavez provides the natural setting upon which the outstanding recreation quality is dependent.

Education/Research

Wilderness designation would assure the preservation of the existing "natural laboratory". (See Section 3, Existing and Potential Uses.)

Preclusion of vehicular access could limit current Native American uses. However, the preservation of solitude and naturalness could enhance these activities, since they are often dependent on a natural setting.

AMENDED BOUNDARY ALTERNATIVE

Under the Amended Boundary Alternative, 8,780 acres of public land within the Ignacio Chavez WSA would be recommended for wilderness designation (see Map 2). The amended boundary would exclude 1,181 acres of public land for the reasons stated previously in Section 4, Wilderness Criteria; Managability. If the area within the amended boundary is designated wilderness, existing and potential uses would be managed by the Wilderness Management Policy (1981), as noted in the discussion of the All Wilderness Alternative.

Impacts to Minerals

Impacts to minerals would remain the same as stated in the all wilderness alternative.

Impacts to Other Resources and Uses

Impacts to other resources and uses would remain the same. The reduced acreage is not significant enough to impact existing wilderness values.

NO ACTION ALTERNATIVE

"No Action" means that the Ignacio Chavez WSA would be managed as undesignated multiple use lands. The most probable uses of the area if not designated as wilderness would be continued livestock grazing, possible mineral exploration, fuelwood cutting, and continued ORV use. Management actions calling for various degrees of vegetative manipulation, water developments and rangeland improvements have been identified by the wildlife, range and forestry programs. The Ignacio Chavez wilderness characteristics would be subject to increased pressure for mineral exploration and development. (Refer to Section 3, Existing and Potential Uses).

Under the no action alternative, the Ignacio Chavez WSA would be recommended nonsuitable for wilderness designation. If the WSA is not designated wilderness, existing and potential uses would continue, without regard for the Interior Management Policy and Guidelines for Lands Under Wilderness Review (1979).

The no action alternative would not have significant impacts on air quality, realty actions, range, minerals or timber. For this reason, they are not included in the following discussion.

Impacts to Wilderness Values

Mineral exploration and development, increased ORV activity, home-use fuelwood cutting and any other extensive surface disturbing activity would severely impact the wildlife habitat. This management emphasis would create a reduction in the opportunities to experience solitude or primitive and unconfined recreation. Over time, all of these uses could be expected to

significantly impact naturalness. The fragile resources discussed previously (refer to Section 4, Wilderness Criteria; Special Features) would be particularly vulnerable to development-oriented management.

No protective designation has been proposed for the Ignacio Chavez WSA. The cumulative effect of this lack of a protective designation and the above management practices would degrade or eliminate Ignacio Chavez's wilderness characteristics.

Impacts to Other Resources and Uses

Soils, Watershed, Vegetation

Continued vehicular access, over time, could result in additional ruts and create the potential for reduced watershed quality. This occurrence would also affect soils and vegetation.

Wildlife

Non-wilderness management could result in significant increases in human activity and thus impact those species dependent on an unmodified ecosystem. However, a wider range of habitat management activities could occur under this alternative, including the development of planned wildlife waters. The no wilderness alternative would allow the full implementation of the Rio Puerco Habitat Management Plan.

Cultural

Continued vehicular access would create a greater potential for vandalism, but would also allow for more frequent vehicular patrol and monitoring. Cultural resources would be vulnerable to increased surface disturbing activities. These impacts could be mitigated by a wide variety of management options other than wilderness, such as withdrawal or closure as well as specific or area cultural resource management plans.

Recreation

Opportunities for primitive recreation would be reduced, as discussed under impacts to wilderness values. Primitive and unconfined recreation relies on a resource base of a predominately natural environment. Such an environment would not exist under a development oriented management.

Recreation relying on vehicular travel as well as motocross use would continue.

Education and Research

The natural setting supporting the special features discussed in Section 4, Wilderness Criteria, would be subject to increased surface disturbance and vehicular travel. This would considerably degrade the Ignacio Chavez WSA's potential for use as a "living laboratory". (Refer to Section 3, Existing and Potential Uses, Education and Research).

Native American Uses

The natural settings on which these uses are often dependent, would be subject to surface disturbing activities.

SECTION 7

RECOMMENDED ACTION

RECOMMENDED ACTION DESCRIPTION

It is recommended to support the amended boundary alternative which recommends 8,780 acres of Ignacio Chavez WSA's original 9,961 acres as suitable for wilderness designation.

RATIONALE

Ignacio Chavez WSA contains abundant, high quality wilderness characteristics. The vegetative diversity in the Ignacio Chavez WSA is a function of the integration of the ecotypes supported by three principle land forms. It is this integration that supports such rich and varied opportunities for primitive and unconfined recreation, solitude and abundant special features. (Refer to Section 4, Wilderness Criteria.) Significant visual appeal (variations in form, line and color) naturally evolve from such diversity. Preservation of these outstanding values outweighs those other commodities which would be foregone by wilderness designation. Ignacio Chavez's outstanding wilderness values could not be preserved through another type of designation.

Commodities foregone include the planned water pipeline and stock facilities and the development of several wildlife waters, the possible development of a small coal mine, and curtailment of any motorcross activity.

CONSISTENCY WITH OTHER PLANS

Several wildlife waters proposed in the Rio Puerco Habitat Management Plan (done in coordination with the New Mexico Department of Game and Fish) would not be developed.

There are no known additional inconsistencies with the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Wilderness Draft Environmental Assessment.

ATTACHMENT 1

WILDLIFE SPECIES COLLECTED OR SIGHTED ON THE IGNACIO CHAVEZ GRANT WSA

Common Name	Scientific Name
Badger	Taxidea Taxus
Black Bear	Ursus americanus
Bobcat	Lynx rufus
Cliff Chipmunk	Eutamias dorsalis
Colorado Chipmunk	Eutamias quadriuttatus
Least Chipmunk	Eutamias minimus
Cottontail	Sylvilagus spp.
Coyote	Canis latrans
Mule Deer	Odocoileus hemionus
Elk	Cervus canadensis
Deer Mouse	Peromyscus maniculatus
Pinyon Mouse	Peromyscus truei
Silky-Pocket Mouse	Perognathus flavus
Porcupine	Erethizon dorstum
Gunnison's Prairiedog	Cynomys gunnisoni
Bannertail Kangaroo Rat	Dipodomys spectabilis
Abert's Squirrel	Sciurus aberti
Rock Squirrel	Spermophilus variegatus
White-Tailed Antelope Ground Squirrel	Ammospermophilus leucurus
Mexican Woodrat	Neotoma mexicana
Stephan's Woodrat	Neotoma stephensi
White-tailed Woodrat	Neotoma albigula
Mountain Bluebird	Sialia currucoides
Western Bluebird	Sialia mexicana
Mountain Chickadee	Parus gambeli
Crow	Corvus brachyrhynchos
Mourning Dove	Zenaidura macroura
Golden Eagle	Aquila chrysaetos
Purple Finch	Carpodacus purpureus
Common Flicker	Colaptes auratus
Ash-Throated Flycatcher	Myiarchus cinerascens
Dusky Flycatcher	Empidonax oberholseri
Gray Flycatcher	Empidonax wrightii

Attachment 1 (Cont.)

Common Name	Scientific Name
Western Flycatcher	<i>Empidonax difficilis</i>
Black-Headed Grosbeck	<i>Pheucticus melanocephalus</i>
Red-Tailed Hawk	<i>Buteo jamaicensis</i>
Sharp-Shinned Hawk	<i>Accipiter striatus</i>
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
Stellar's Jay	<i>Cyanocitta stelleri</i>
Gray-Headed Junco	<i>Junco caniceps</i>
Oregon Junco	<i>Junco oreganus</i>
American Kestrel	<i>Falco speverius</i>
Clark's Nutcracker	<i>Nucifraga columbiana</i>
Pygmy Nuthatch	<i>Sitta pygmaea</i>
Red-Breasted Nuthatch	<i>Sitta canadensis</i>
White-Breasted Nuthatch	<i>Sitta carolinensis</i>
Great-Horned Owl	<i>Bubo virginianus</i>
Horned Lark	<i>Eremophila alpestris</i>
Raven	<i>Corvus Corax</i>
Roadrunner	<i>Geococcyx californianus</i>
Robin	<i>Turdus migratorius</i>
Loggerhead Strike	<i>Lanius ludovicianus</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>
Chipping Sparrow	<i>Spizella Passerina</i>
Vespar Sparrow	<i>Poecetes gramineus</i>
Violet-Green Swallow	<i>Tachycineta thalassina</i>
Plain Titmouse	<i>Parus inornatus</i>
Rufous-Sided Towhee	<i>Pipilo erythrophthalmus</i>
Wild Turkey	<i>Meleagris gallopavo</i>
Solitary Vireo	<i>Vireo solitarius</i>
Turkey Vulture	<i>Cathartes aura</i>
Graces Warbler	<i>Dendropica graciae</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Western Rattlesnake	<i>Crotalus viridis</i>
Western Diamond-Backed Rattlesnake	<i>Crotalus atrox</i>
Gopher Snake	<i>Pituophis melanoleucus</i>
Lesser-Earless Lizard	<i>Holbrookia maculata</i>

ATTACHMENT 2

VRM CLASS RATINGS

"The purpose of a Visual Resource Management (VRM) Class is to reduce the visual impacts of developed activities and to manage the quality of the visual environment."

VRM classes are determined by combining the ratings from scenic quality classes, visual sensitivity levels, and distance zones. Scenic quality classes are rated for landform, water, color, vegetation, intrusions and uniqueness. These elements are combined and the area is quantified as one of the following classes:

Class A - Unique, outstanding features

Class B - Outstanding features common to the physiographic region

Class C - Features common to the physiographic region

Sensitivity levels are determined by frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and assigned a high, medium or low sensitivity level.

Distance zones are placed in three categories: foreground/middleground zone, background zone, seldom seen zone. The foreground/middleground zone is closer to the view and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are less detailed to the viewer and most impacts blend with the landscape because of the distance viewed from.

Ratings from scenic quality classes, visual sensitivity levels and distance zones are combined to form VRM classes. The VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape. See Appendix 3 for definitions of each VRM class.

ATTACHMENT 2 (Cont.)

CRITERIA FOR VISUAL RESOURCE MANAGEMENT CLASSES

- Class I - Applies only to classified special areas, e.g., roadless, wilderness, primitive, natural areas, etc. This quality standard is established through legislation or policy. Only natural ecological changes are allowed.
- Class II - Landscapes with Class A scenery quality, or Class B scenery quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color or texture) caused by a management activity should not be evident in the characteristic landscape.
- Class III - Landscapes with Class B scenery quality and high visual sensitivity in the background visual zone, or with Class B scenery quality and medium visual sensitivity in the foreground/middleground visual zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in the basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape. However, the changes should remain subordinate to the visual strength of the existing character.
- Class IV - Landscapes with Class B scenery quality and high visual quality sensitivity in the seldom seen visual zone, or with Class B scenery quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.
- Class V - Applies to areas identified in the scenery quality inventory where the quality class has been reduced because of unacceptable intrusions, or to areas that have the potential for enhancement. This classification indicates that change is needed. The class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding countryside. It should be considered an interim short-term classification until one of the other objectives can be reached through rehabilitation or enhancement. The desired visual quality objectives should be identified.
-

Source: BLM Manual 6310 (U. S. Department of the Interior, Bureau of Land Management, 1975.)

ATTACHMENT 3

PUBLIC RESPONSE SUMMARY

Unit Number: NM-010-20

Unit Name: Ignacio Chavez

FAVOR Wilderness Study

I 1/
14 S 2/
14

OPPOSE Wilderness Designation or Wilderness Study Status

I S
7 12

I	S	Supporting Reasons
1	1	Meets Size Criterion
4	4	Meets Naturalness Criterion
1	1	Other Insignificant Intrusions
4	4	Offers Opportunities for Solitude
4	4	Offers Opportunities for Recreation
2	2	Supplemental Values
1	1	Manageable as Wilderness
7	7	No Supporting Reasons Offered

I	S	Supporting Reasons
2	7	Does Not Appear to Be Natural
4	4	Resource Conflicts

I S FORM LETTERS & PETITIONS

2524 2659 Endorsements of Conser-
vationist Proposal
1 615 Petition Endorsing Con-
servationist Proposal

I S FORM LETTERS & PETITIONS

SEQUENCE NUMBERS

C015 K017
C016 L020
K018 L033
F014 H028
B029 S035
L022 D010
L003 S047
C030

G025
G011
Y004
D030
D031
D029
0001

1/ Refers to inputs, e.g., letters or public testimony.

2/ Refers to signatures, e.g., the number of people who signed a letter.

APPENDIX B

EAGLE PEAK WSA (NM-020-019)

I. GENERAL DESCRIPTION

A. Location

The Eagle Peak Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. The WSA is approximately 6 air miles west of Quemado.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Armstrong Canyon, Blaines Lake, Lake Armijo, Tejana Mesa, Tejana Mesa SW, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

Eagle Peak enjoys a generally mild semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September primarily from brief, but often heavy thundershowers. Winter is usually the driest season. The WSA receives 9 to 14 inches of precipitation annually.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Eagle Peak WSA consists of rolling topography, broken by sandstone and basalt mesas and canyons. Volcanic features, including large cinder cones and associated lava flows, are also present and result in a topographically diverse WSA. Elevations range from 6,400 to 7,550 feet, with the highest elevations occurring in the eastern portion of the WSA.

C. Land Status

The WSA contains 32,748 acres of public land. Inholdings within the WSA consist of 80 acres of state land, 360 acres of private land, and 5,640 acres of split estate. (See Map 3 for land status.)

MAP 2

IGNACIO CHAVEZ WSA (NM 010-020)

Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- CONSIDERED FOR SPECIAL DESIGNATION
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

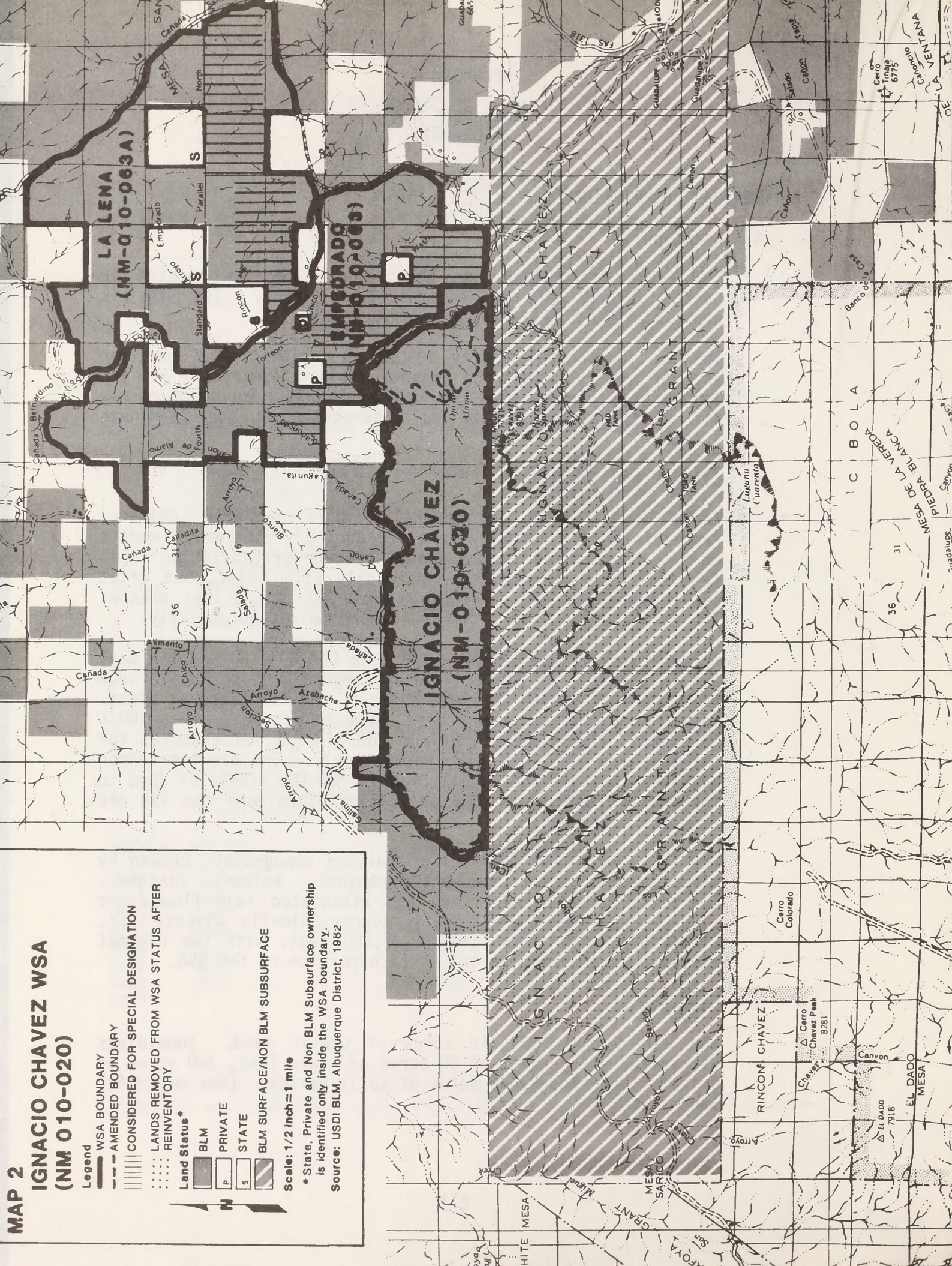
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Albuquerque District, 1982



D. Access

The WSA has good physical and legal access. State Highway 32 is adjacent to portions of the northern boundary of the WSA and County Road A007 parallels the western edge of the WSA. Numerous unimproved ranch access routes traverse the WSA from north to south and east to west.

II. EXISTING RESOURCES

A. Geology

The Eagle Peak WSA lies within the southern portion of the Colorado Plateau. Gently southeastward dipping sediments of Cretaceous and Tertiary age dominate the surface geology of the WSA. Natural erosion of these sediments has produced mesas of low relief throughout the area. Flows of Quaternary basalts and numerous related cinder cones occasionally cap the older formations within the vicinity. Thin Quaternary alluvium also forms the surface of a significant portion of the central part of the WSA.

Exploration wells drilled within the region indicate that Precambrian granite, Permian sediments, and Triassic sediments occur beneath the surficial deposits.

In general, a long history of sedimentary rocks, which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then, in part, covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

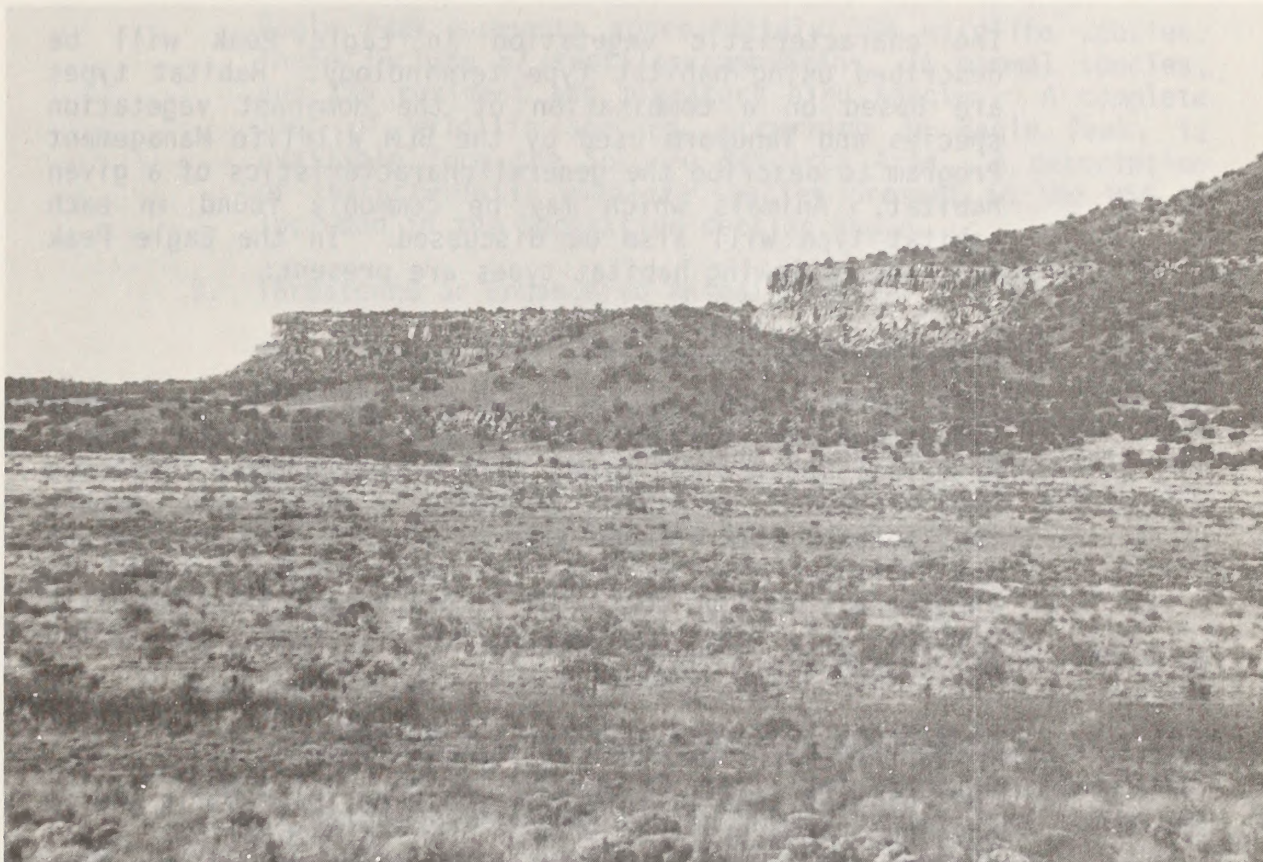
1. Surface Water

The Eagle Peak WSA is located in the Little Colorado River sub-basin. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the mainstreams. Earthen type reservoirs designed to catch and store runoff normally contain water 6 months of the year. Quality data for the Little Colorado sub-basin are not available.

2. Groundwater

The source of all water in the Little Colorado sub-basin is precipitation. No groundwater is known to enter the basin from outside areas. Most rock formations present will yield enough groundwater locally to supply stock needs. The alluvium of stream valleys and bolson fill are the most important groundwater reservoirs in the WSA. The volume of groundwater available for development in the Little Colorado sub-basin is huge but is so distributed as to make recovery in large amounts uneconomical. In general, groundwater from stream-valley alluvium and bolson deposits is of good quality and suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Groundwater from intrusive and volcanic rocks is

generally of good quality but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, groundwater is usually highly mineralized.



Sandstone Mesas.

C. Soils

The soils in Eagle Peak were formed in a variety of parent materials, including sandstone, shale, basalt, volcanic ash, and cinders.

Approximately one-third of the area is composed of soils which formed in volcanic ash or cinders. These soils are on gently sloping to rolling slopes and have a slight water erosion hazard.

Another one-third of the area has soils that developed over basalt or sandstone. The water erosion hazard on these soils is slight except on steep slopes.

There are two small areas of erosive soils in the WSA. The fine textured soils that occur in broad swales and drainage ways and the soils on steep rocky side slopes of mesas, badlands, and canyons have a high water erosion hazard and would be easily damaged by surface disturbance.

D. Vegetation

1. General

The characteristic vegetation in Eagle Peak will be described using habitat type terminology. Habitat types are based on a combination of the dominant vegetation species and landform used by the BLM Wildlife Management Program to describe the general characteristics of a given habitat. Animals which may be commonly found in each habitat type will also be discussed. In the Eagle Peak WSA, the following habitat types are present:

Pinyon-Juniper Hill (20,570 acres)

This habitat type occurs primarily on hills and steep slopes and in places is found on flats next to the slopes. Principal vegetation, other than pinyon-juniper, includes blue grama, mountain mahogany, oak, and rubber rabbitbrush, with fringed sage, winterfat, and bottlebrush squirreltail also present. Animals commonly found in these areas include cottontails, black-tailed jackrabbits, coyotes, mule deer, striped skunks, kit foxes, red-tailed hawks, and golden eagles.

Blue Grama-Snakeweed Hill (10,100 acres)

This habitat type is primarily found on lower hills and in openings interspersed within the Pinyon-Juniper Hill habitat type. The principal vegetation species are blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Other plant species present include fringed sage, winterfat, galleta, Apacheplume, oak, and scattered pinyon and juniper. The aspect is usually short and mid-grasses, with scattered low shrubs. Common animals in this area include black-tailed jackrabbits, coyotes, kit foxes, pronghorn antelope, red-tailed hawks, and golden eagles.

Russian Thistle-Alkali Sacaton Valley (2,078 acres)

This habitat type is found primarily in large, flat bottomlands and low spots. Principal vegetation, other than Russian thistle and alkali sacaton, includes fringed sage, winterfat, bottlebrush squirreltail, and annual forbs. Common animals in this area include cottontails, black-tailed jackrabbits, coyotes, and pronghorn antelope.

2. Threatened or Endangered Plant Species

The WSA contains habitat which offers potential for the occurrence of eight species of threatened or endangered plants. A list of these potentially occurring plants is available on request from the Socorro Resource Area.

E. Wildlife

1. General

Eagle Peak supports approximately 306 wildlife species. These include 57 reptiles/amphibians, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species, occurring in Eagle Peak, is available from the Socorro Resource Area. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Animal Species

In addition to the characteristic wildlife species present, the WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federal endangered species. Wintering bald eagles are known to occur in the WSA.

F. Visual

This large WSA contains scenery rated as Visual Resource Management (VRM) Classes II and III.

The scenery in most of the WSA has been designated as VRM Class III. It is an area of mesas and open grasslands with visual interest enhanced by volcanic features and sandstone cliffs.

The VRM Class II scenery in the Cottonwood Canyon area is derived from the eroded sandstone, which has produced a visual environment characterized by vertical relief and colorful erosional features.

G. Cultural

Portions of the WSA were the subject of a Class II Cultural Resource survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 6,400 acres in the WSA, identified 63 archaeological sites, ranging from petroglyphs to campsites and villages. These sites represent human habitation from archaic period (6000 BC to Christian Era) to the homesteading era. Based on the results of the Class II survey and project specific inventories, cultural resource values in the WSA are considered to be high.

The cultural values of the WSA are enhanced considerably by the presence of Zuni Salt Lake immediately north of the WSA. The Lake has long been a source of pure salt. Early man probably visited the site, however, whether it served as his salt supply is unknown. Indian ruins, dating back 1,000 years, have been found in the area, which give evidence of the

prehistoric importance of the area. Because of the availability of this nutritional necessity, the Indians of the Southwest, including the Acoma, Laguna, Zuni, Apache, and Navajo, have built up extensive religious beliefs concerning the area. Many tribes continue to make pilgrimages to the Lake to gather domestic salt and to worship. Among the deities believed to inhabit the area, are the Twin War Gods and Salt Mother. With the arrival of the Spaniards in 1540, the Lake became known historically, when they praised the quality of the salt in their journals. Zuni Salt Lake, in addition to being a source of salt and ceremonial significance, was considered to be neutral ground, regardless of current hostilities.

H. Air

Air quality in the region is presently considered good. However, this situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Ten exploratory oil and gas wells and deep water wells have been drilled within the Quemado area; however, none of them were within the WSA. This local drilling verified that a sequence of oil and gas reservoir and possible source rocks occurs in the area. Although the U.S. Geological Survey (USGS) classifies the region as being prospectively valuable for oil and gas, available information suggests a low favorability for the lands in the WSA.

Three Federal non-competitive oil and gas leases are present within the eastern portion of the WSA. These leases cover approximately 3,100 acres. It is probable that most of the Federal mineral estate in this area could be leased noncompetitively for oil and gas. Although no oil and gas exploration has occurred within the WSA, three dry wells have been drilled locally since 1950. Any positive evidence of oil and gas in the region could stimulate exploration attempts within the WSA.

b. Coal

Although no exploration for coal has occurred within the WSA, recent information from nearby areas suggests a high potential for the exploration and discovery of economic coal beds. Private and government exploration in areas 10 miles northeast of the WSA has recently identified economic coal reserves within the Mesaverde group. The Mesaverde group occurs shallowly over the majority of the WSA. This recent discovery has stimulated significant industry interest within the area. This is evidenced by the fact that in late 1981 the New Mexico State Land Office received almost \$2 million worth of bonus bids for approximately 6,400 acres of coal leases 7 to 10 miles north of the northeastern border of the WSA.

c. Geothermal

Although moderate geothermal anomalies exist within the region, there is very low potential for any exploration or development of geothermal resources.

d. Salt

The saline spring-fed Zuni Salt Lake, located along the northern border of the WSA, is evidence that a concentrated source of salt probably occurs locally within the subsurface.

A New Mexico State salt lease has been active at the Zuni Salt Lake for approximately 40 years. The Zuni Salt Lake is adjacent to the northwestern extension of the WSA. Despite the lease's longevity, only minor production has occurred at the property. Although low, there is a possibility that exploration for the salt's source could occur within the WSA.

2. Locatable

Within the WSA, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration within and adjacent to the WSA has identified subeconomic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate favorability for economic deposits.

Currently, there is no known exploration or development of locatable minerals within the WSA. Several hundred mining claims are presently recorded with the Bureau of Land Management (BLM) for the area along and within the southeastern margin of the WSA where the Baca formation crops out. The Energy Reserves Group and Teton Exploration Drilling located these claims in 1978 for potential uranium mineralization. Nine uranium test holes were drilled within the southernmost group of claims, four of which were along the southern border of the WSA. Five additional test holes were also drilled within the southeast-central portion of the WSA. This exploration, which occurred between 1979 and 1981, detected only subeconomic uranium mineralization. No evidence of assessment work or intents to hold have been filed for 1981. Because of the lack of recordation, as well as previous indications by the Energy Reserves Group, it is assumed that these claims have been abandoned.

When economic and political conditions again favor the uranium industry, the region containing the WSA would be a target for exploration.

3. Saleable

Thick sand and gravel deposits occur locally within the Quaternary alluvium, the Baca formation, and the volcanic sediment facies of the Datil formation. These deposits comprise a large portion of the WSA's surface. The majority of the material consists of gravels and cobbles of quartzites, quartzose sandstones, arkosic sandstones, and assorted volcanic rocks. A moderate favorability for the identification of economic sand and gravel deposits exists within the WSA.

There are several excellent sources of cinders within the WSA. These cinder cones are associated with flows of Quaternary basalts. The WSA's cinder deposits are of excellent quality and could be used for any of the typical lightweight aggregate or landscaping purposes associated with this type of material.

Small deposits of petrified wood have been found within the Baca formation. The scientific value of the wood is minor, but the deposits could provide areas for specimen collecting.

There have been no recorded sales of common variety minerals from the WSA. Potential gravel resources could possibly be needed for improving roads adjacent to the WSA. The excellent cinder deposits within the WSA have poor access which reduces their economic significance. Development of these resources would depend on future population increases within the vicinity due to their high bulk, low value nature.

B. Watershed

Eagle Peak is located within the Blaines Lake and Quemado watersheds. All lands within these watersheds have been classified as productive areas. Most of the area has been rated as being in the moderate erosion class, although some areas in the WSA are in a critical erosion class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. A watershed plan will be developed on portions of the Baca allotment and watershed work will be done to improve the critical erosion areas to moderate. Runoff averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

The boundary of the WSA encompasses portions of four allotments: Rancho Allegre, Rulon Bigelow, Viola Orona, and Gene Baca.

The four allotments graze livestock in the WSA and utilize a year-round cow/calf operation. The Rancho Allegre Cattle Company and Rulon Bigelow allotments have approved Allotment Management Plans (AMP) in cooperation with the BLM. These AMPs consist of planned rangeland improvements and scheduled livestock moves. Most of the planned rangeland improvements have been constructed. The Viola Orona and Gene Baca allotments graze livestock in the WSA according to forage availability.

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage condition, supplementing salt or protein, livestock water availability, breaking ice on livestock waters, and performing maintenance on fences, pit tanks, windmills, and pipelines. Most of the daily ranch operation is conducted using pickups or other vehicles. Normal maintenance of various rangeland improvements would include motorized vehicles such as a pickup truck, a bulldozer to clean the pit tanks, a tractor with backhoe to repair or replace pipeline, and a drill rig to maintain the windmills.

The allotments, authorized use, and associated rangeland improvements in the Eagle Peak WSA are shown on Table 1.

TABLE 1

Allotments	Authorized Use (Federal)	Rangeland Improvements
Rancho Allegre	4,104 AUMs; 342 CYL*	16.5 miles of interior fence; 11 miles of boundary fence; 1 windmill; 5 pit tanks; 3 miles of pipeline; 2-5,000 gallon storage tanks; 2 drinker tubs.
Rulon Bigelow	432 AUMs; 36 CYL	2 pit tanks; 1 windmill; 2 drinker tubs; 6 miles of fence.
Viola Orona	122 AUMs; 11 CYL	1 pit tank
Gene Baca	444 AUMs; 37 CYL	4 miles of boundary fence

Note: *AUMs - Animal Unit Months; CYL - Cows Yearlong

D. Timber Harvest

The Eagle Peak WSA is generally of an open character with scattered pinyon and juniper woodlands occurring on the ridges, mesa sides, and hilly areas. The woodlands are

composed primarily of one-seed juniper, except in the southern portions of the WSA where pinyon pine is mixed with the juniper. Most of these woodlands are of small size and volume, being in open stands and occurring on the steeper terrain of the area.

Past use of the area's woodland resources has been limited primarily to one area $\frac{1}{2}$ mile southeast of the Eagle Peak WSA just north of the Burnett Ranch Headquarters.

Eagle Peak contains approximately 8,430 cords of standing greenwood. For this reason, the WSA has a potential for firewood and post cutting. This potential is enhanced by the easy accessibility afforded by the numerous vehicle routes which exist in the area.

Since the woodcutting area was authorized southeast of the WSA boundary, people are familiar with this portion of the WSA. As a result, illegal woodcutting has taken place throughout the area. Both illegal and legal woodcutting trends, as supported from past sales and contacts, will continue to increase. Controlling this growing illegal use of the woodlands may become more of a management problem than the authorizing of proper use.

E. Recreation

Current recreational use is limited primarily to deer hunting, rockhounding, and some exploring. Recreational off-road vehicle (ORV) use is also associated with these activities. Zuni Salt Lake, adjacent to the northern portion of the WSA, draws sightseers and those interested in the history of the area.

The area offers opportunities for backpacking, hiking, camping, nature photography, and other activities. Presently, there is little recreational use in the WSA. This is probably the result of limited public knowledge of the recreational resources present, uncertainty over land ownership, and distance from population centers.

ORV and other recreational uses in this area may increase in the future if coal development occurs in the Fence Lake area north of the WSA. If this development occurs, it is anticipated that the Quemado area would experience an increase in vehicle-dependent recreation.

F. Education/Research

The cultural resources and volcanic features present in the WSA offer unique opportunities for archaeological and geological research.

Opportunities for environmental education exist based on the wildlife, vegetation, geology, and cultural resources present in the WSA. The distance from population centers, however, will probably limit the direct use of the area for environmental education.

G. Native American

As was noted earlier, Zuni Salt Lake (on private land north of the WSA) is an important Native American religious site. However, it is not known at this time if religious uses centered at Zuni Salt Lake also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land within the WSA withdrawn.

I. Wildlife

The potential of this area as wildlife habitat could be enhanced in the future by vegetation manipulation and the creation of additional water sources.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of the Mandatory Wilderness Characteristics

a. Naturalness

Eagle Peak has diverse landforms ranging from sandstone mesas and volcanic cinder cones to gently rolling hills and lava flows. Vegetation in the WSA is characterized by scattered pinyon-juniper woodlands interspersed among short grasslands.

The human impacts in the WSA consist of rangeland improvements and access routes which support livestock grazing. Eagle Peak contains 14 livestock watering structures (earthen tanks and metal drinkers along pipelines), 2 storage tanks, 2 windmills, about 35 miles of fences, and 3 miles of inconspicuous buried pipeline. Access to these rangeland improvements is provided by 45 miles of vehicle routes. These vehicle routes vary in quality from dim two-track ways to well used major ranch access routes.

The impacts in this WSA are not typically screened from view by topography or vegetation. This lack of screening causes existing impacts to extend their visual influence over a wide area.

The impacts in the WSA are the result of rangeland improvements in support of ranch operations, which would be allowed to continue under BLM wilderness management. This would include necessary vehicular access for ranch operations and maintenance of rangeland improvements. Under wilderness management, necessary access needs would be defined and other routes would be closed. This would reduce but not eliminate the impacts of vehicular use on naturalness in the WSA.

Because impacted areas occur in all but the extreme eastern portion of the WSA, there appears to be little potential for boundary adjustments to improve the naturalness of the WSA.

The cumulative effect of human impacts is considered to reduce the level of perceived naturalness in the Eagle Peak WSA.

b. Solitude

Eagle Peak has numerous topographic features and wooded areas which provide opportunities for solitude.

These opportunities would be greatest in the wooded mesas of the extreme eastern part of the WSA and the mesas and canyons in the southern and southwestern portions of the WSA.

Higher elevations of the WSA, because of the greater visibility afforded, would offer less potential for avoiding the evidence of human activities than the well-screened canyons and mesa edges.

c. Primitive and Unconfined Recreation

Opportunities for primitive recreation in the WSA consist primarily of deer hunting, sightseeing, hiking, and camping. Sightseeing opportunities are provided by the geology of the area, which includes sandstone mesas and volcanic cinder cones. The geology of the area also provides some rockhounding opportunities for small pieces of petrified wood and agate. Large raptors, including golden eagles, add interest to sightseeing in the WSA. Deer and pronghorn antelope also may be seen, but are not common. The cultural resources of the area, especially the rock art which can be found on many of the sandstone mesas, also provide sightseeing opportunities. The geology and wildlife add interest to hiking or camping in the WSA. Extended camping would be limited, however, by the lack of water other than livestock waters, for recreational users. Deer hunting occurs in the WSA, but is limited by low populations of mule deer.

2. Special Features

Eagle Peak contains significant archaeological values representing human habitation since archaic times (approximately 6000 BC). Volcanic features, including a series of cinder cones, also add significance to the area. The WSA also provides habitat, which supports year-round use by golden eagles and occasional use by wintering bald eagles.

3. Multiple Resource Benefits

The Eagle Peak WSA contains a variety of natural values, including archaeological resources, interesting geologic features, large raptor habitat, and watershed values.

Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for these and other natural values than would the administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits provided by wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

Ecosystem and landform diversity was classified using the Bailey (1976) - Kuchler (1966) system to identify the potential natural vegetation occurring in the WSA. The Bailey-Kuchler system classifies the Eagle Peak WSA as being within the Colorado Plateau Province with a potential vegetation of approximately 11,572 acres of grama-galleta steppe and 21,176 acres of pinyon-juniper woodland.

b. Distance to Population Centers

The WSA is within 5 hours driving time from Albuquerque, New Mexico.

B. Manageability

Subsurface ownership patterns present a significant problem for management of the WSA as wilderness. Mineral rights under 5,640 acres of public land are in state ownership. These split estate lands are concentrated in the center of the WSA, but are also found in scattered sections throughout the WSA. The extent and location of these inholdings produce a WSA with extremely awkward boundaries.

The existence of extensive mineral inholdings in an area believed to have potential for mineral development will limit the ability of the BLM to protect wilderness values in this WSA.

The impacts to wilderness values in the WSA from providing access to these subsurface inholdings is difficult to assess at this time. However, incompatible uses are expected to occur because these private rights exist in an area believed to have moderate uranium potential, excellent sources of cinders, and a high potential for economic coal beds. State land, 7 miles north of the WSA, was leased for coal in 1981 and there has been recent industry interest in leasing Federal coal in this same general area. The coal bearing formations in this leased area extend under much of the WSA. This recent interest in coal in the region has been stimulated by the construction of two coal-fired generating stations in Arizona, approximately 30 miles west of the WSA.

Surface ownership patterns include 360 acres of private and 80 acres of state land inholdings. While not as extensive as the

subsurface inholdings, providing access to these surface inholdings would also create manageability problems.

A large number of rangeland improvements are also located in the WSA. BLM wilderness management policy allows for the continued existence and necessary maintenance of rangeland improvements. Necessary access routes for ranch operations and for the maintenance of existing rangeland improvements will also have to be determined. By allowing only necessary access, the impact of ranch operations could be lessened. Some unused access routes would revegetate, thereby improving the impression of naturalness in the WSA.

The general lack of topographic barriers to vehicular access and the number of vehicle routes, which presently provide access into the WSA, will also complicate wilderness management. Some routes could be physically closed, but it would require extensive patrolling and public information to completely eliminate unauthorized uses, such as illegal woodcutting, from the WSA.

Manageability of the area as wilderness would be enhanced by the acquisition through voluntary exchange of 5,640 acres of state-owned mineral rights, 80 acres of state-owned surface lands, and 360 acres of private surface inholdings. This would reduce the possibility of incompatible uses occurring in the WSA, if it is designated as wilderness, and reduce problems arising from providing reasonable access to these inholdings.

If predicted coal development occurs in the region, manageability would be impacted by an increase in ORV use, illegal woodcutting, and a general increase in visitor use.

V. PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considering public comment obtained from a variety of sources, including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness Environmental Impact Statement (EIS).

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited included: that the type of landforms and the expanse of grassland in the WSA would add diversity to the wilderness preservation system; the need to preserve significant raptor habitat and good pronghorn antelope habitat; and high cultural resource values and scenic values. It was also noted that existing livestock operations would continue under wilderness management.

Opposition to wilderness designation of Eagle Peak has centered around conflicts with mineral and livestock interests. A large number of Catron County residents are opposed to additional wilderness areas in Catron County. Reasons for opposition included the following: the lack of naturalness due to rangeland improvements; the lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on livestock operations; and the impacts of wilderness designation on future economic development of Catron County.

VI. ALTERNATIVES AND IMPACTS

This section will discuss two alternatives and their impacts: All Wilderness and No Action/No Wilderness.

A. All Wilderness

Under this alternative, the entire 32,748-acre WSA would be recommend suitable for wilderness designation.

1. Impacts to Minerals

The extent of mineral values in the area is not completely known, but the WSA does contain potentially significant coal deposits and moderate uranium potential. Sand and gravel and cinder sources are also present in the WSA.

The exploration, development, and production of those minerals actually present in the WSA would be impacted by wilderness designation. The nature of the impacts would vary with the category of minerals.

a. Leasable

Under existing laws, wilderness designation would preclude the issuance of new mineral leases.

Eagle Peak has high favorability for containing economic coal reserves. Anticipated future demands to explore for and develop these reserves would be forgone by wilderness designation.

The WSA has low favorability for the discovery of oil and gas or geothermal resources. Because of the low favorability for economic occurrences of oil and gas or geothermal resources, wilderness designation would not result in significant impacts to these resources.

b. Locatable

Location, prospecting, exploration, development, and patenting of new mining claims under the mining laws would not be allowed after wilderness designation.

Development work, extraction, and patenting would be allowed to continue only on valid claims located before designation. These activities would require a plan of operations approved by the BLM. In approving plans of operations, the BLM must protect the rights of the operator while minimizing impacts on the wilderness resource.

There are numerous mining claims in the WSA. If a valid discovery is made on any of those claims prior

to wilderness designation, it could be developed. If no discovery is made, wilderness designation would preclude further development of the claims. In Eagle Peak, it is presumed that most of the existing claims are for uranium. Although the area is favorable for uranium mineralization, present information would suggest little impact on nationwide uranium production since large areas with similar potential are open to exploration and development.

c. Saleable

No permits to remove materials such as sand and gravel or cinders would be issued in designated wilderness areas. There are excellent sources of cinders and sand and gravel in the Eagle Peak WSA. In spite of this potential, wilderness designation would not affect local supplies since many alternate sources are found in the vicinity of the WSA.

If the area is recommended suitable for wilderness designation, additional mineral surveys would be conducted by the USGS and U.S. Bureau of Mines to augment current information. These additional mineral surveys would be considered before a final decision on wilderness designation is made by Congress.

2. Impacts to Other Resources and Uses

a. Livestock Grazing

The WSA presently supports 5,102 AUMs; these grazing levels would not be impacted by wilderness designation. Grazing is a permissible and compatible activity in wilderness; however, limitations on vehicular access, types of construction materials, and location of developments would be imposed to protect wilderness characteristics.

It is difficult to assess how these limitations would affect grazing management in the WSA because the nature and location of future rangeland improvements are not known. However, based on such factors as the existing ecological rangeland condition, present livestock distribution problems, and the potential of the range sites, it is anticipated that few additional rangeland improvements would be needed to improve grazing management in the WSA. For this reason, wilderness designation would not have significant impacts on livestock grazing in the WSA. It should also be noted that in many cases wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from

limitations on design and placement rather than the prohibition of new rangeland improvements.

Wilderness designation would result in the modification of the current AMP for Rulon Bigelow and the development and implementation of AMPs for the Gene Baca and Viola Orona allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

Restrictions on vehicle use inside the designated area could reduce vandalism of rangeland improvements and other problems, resulting from vehicle-dependent recreational and other uses.

If this region experiences a population increase as a result of possible coal development north of the WSA, the benefits to livestock operations from closing the area to unauthorized vehicle use could be substantial.

b. Timber Harvest

Eagle Peak contains approximately 8,430 cords of firewood. The potential of this area as a source of firewood and other forest products, such as fence posts, mine ties, and Christmas trees, is enhanced by the easy accessibility provided by the numerous vehicle routes in the area. As a result of wilderness designation, these forest resources would not be available to meet the rising demand from local communities for wood products.

c. Watershed

Watershed management actions to reduce erosion in a critical watershed management area would be impacted by wilderness designation. Structural and treatment measures prescribed in the Divide Planning Area Management Framework Plan (MFP), including the construction of detention dams, pinyon-juniper removal, and watershed tillage would be restricted under wilderness management.

Over time, wilderness management would be expected to protect watershed values by reducing surface disturbance and preserving the natural ground cover in the WSA. These benefits could be substantial if regional coal development occurs. Under these circumstances, it is expected that wilderness management would preclude increased ORV use in the

area. This would reduce watershed problems, resulting from ruts and vehicle scars and subsequent erosion.

d. Recreation

Recreation activities, which require motorized vehicles, would be impacted by wilderness designation. This would not be a serious impact to current uses as the area is little used presently. As mentioned earlier, possible regional coal development could increase the amount of vehicle-dependent recreation in the area. Wilderness designation of Eagle Peak would reduce the acreage available for this type of use.

The impacts to vehicle-dependent recreation would be balanced by benefits to primitive or non-motorized recreation. By preserving the solitude and natural values in Eagle Peak, wilderness designation would ensure that opportunities for primitive recreation, which now exist, would continue to be available to meet future needs.

e. Wildlife

Wilderness designation would limit, but not preclude, management actions designed to improve wildlife habitat through such things as vegetation manipulation and the construction of additional water sources.

There would be few short-term impacts of wilderness designation on wildlife in Eagle Peak. The impacts, derived from the elimination of vehicular access, would include reduced potential for harassment and poaching of wildlife and a reduction in hunting pressure.

Over the long-term, wilderness management would serve to protect the natural values, including the natural distribution and abundance of wildlife species which presently exist in the area. These long-term impacts would increase significantly if the region is found to be suitable for coal production. This would accelerate the human impacts on nonwilderness areas and increase the value of undisturbed areas for wildlife habitat.

The impacts of wilderness designation on threatened or endangered animal species were assessed in a biological assessment covering bald eagles, peregrine falcons, and black-footed ferrets. It was determined that wilderness designation would have no impact on these species.

f. Cultural

Eagle Peak contains a high density of archaeological sites, representing at least 8,000 years of human habitation. The elimination of motorized access would reduce the chance of professional pothunting.

Under this alternative, natural values on lands adjacent to Zuni Salt Lake, an important Native American religious and cultural center would be protected. This would reduce the possibility of incompatible uses interfering with the cultural and religious uses and significance of the area.

Wilderness designation would complicate, but not necessarily preclude stabilization, excavation, and research at archaeological sites in the WSA. These activities may be permitted on a case-by-case basis, where the project would not degrade the overall wilderness character of the WSA and when such activity is needed to preserve the particular resource.

Wilderness designation would also enhance scientific and educational values by preserving the natural environmental setting of the archaeological resources present in the WSA.

g. Wilderness Values

Wilderness designation would end prospecting and mineral development except on valid mining claims and leases. It would also prohibit the filing of new claims and issuing of mineral leases and restrict most motorized vehicle and equipment operation. Furthermore, the building of roads, structures, and installations would also be prohibited, along with commercial enterprises and range, wildlife, or recreation projects not complementary to wilderness resources.

Prohibiting these land uses would help to preserve but could not guarantee the preservation of Eagle Peak's existing natural character and opportunities for solitude and primitive recreation. The 5,640 acres of state-owned mineral rights and potential mineral resources in the WSA reduce the ability of the BLM to control surface uses to protect wilderness characteristics.

Exploration and possible development of these mineral inholdings and necessary motorized access would be allowed under wilderness management. The exercise of these private rights would produce levels of incompatible uses which would significantly impact the

naturalness, solitude, and primitive recreation opportunities of surrounding lands.

B. No Action/No Wilderness

This alternative is a No Wilderness Alternative and represents management according to the decisions contained in the Divide Planning Area MFP (BLM 1983).

1. Impacts to Wilderness Values

The most probable uses of the area, if not designated as wilderness, would be continued livestock grazing, fuelwood sales, mineral exploration, and possible mineral development. Levels of human impacts in the area would be expected to increase in the future as a result of escalating demands for firewood and probable coal development in the region.

The degree to which minerals exploration and development would occur in the WSA is not possible to predict at this time. Some general statements about the impacts of minerals exploration and developments are, however, possible. If significant levels of mineral exploration and development occur, they could result in the disruption of the habitat of large raptors, pronghorn antelope, mule deer, mountain lions, and other wildlife species. Impacts to scenic quality, watershed, and archaeological sites and a reduction of the opportunities for solitude could also occur.

Over time, continued unrestricted vehicular access into the area could impact natural values. These impacts would occur as new routes were created to new rangeland improvements, firewood cutting areas, in support of mineral exploration, or as a result of recreational use.

Management actions, calling for varying degrees of vegetative manipulation, water developments, and rangeland improvements, have been identified by the wildlife, range, forestry, and watershed programs. The individual projects, designed to improve both livestock and wildlife habitat and reduce erosion, would not significantly impact wilderness values. The cumulative effect of these projects, however, would impact wilderness characteristics.

2. Impacts to Other Resources and Uses

a. Livestock Grazing

Under this alternative, no immediate impact on livestock operators in the WSA would occur. There

could be indirect impacts, if coal development occurs in the region. This would increase the population of the area and continued unrestricted vehicular access, under this alternative, could result in increased "people problems" for the livestock operator. There would be no impacts on rangeland program recommendations, which call for rangeland management actions to improve rangeland conditions and forage production. These actions would include vegetation treatments, fenced study plots, seeding trials, and rangeland improvements. (For additional information on these proposed actions, see the West Socorro Rangeland Management Program EIS on file at the Socorro Resource Area.)

b. Timber Harvest

Under this alternative, no impact on the use of forest resources in the WSA would occur. The main thrust of forest management would be to meet an increasing demand for wood products on an environmentally sound basis, control pinyon-juniper as identified in the West Socorro Rangeland Management Program EIS, and to control unauthorized woodcutting.

c. Watershed

Watershed management actions, including watershed tillage and water control structures, would be conducted as described in the Divide Planning Area MFP (BLM 1983). The specific locations and types of projects have not been determined at this time. They would be identified in a site-specific watershed plan to be developed for the area.

Continued vehicular access for ranch operations, recreation, mineral exploration, and woodcutting could result in additional ruts and vehicle scars and increase localized erosion. If mineral development occurs in the area, the resulting surface disturbance could also reduce watershed quality.

d. Recreation

There would be no impact to present low levels of recreational use. The area would remain open to vehicular-dependent recreational uses. Over time, opportunities for primitive recreation could be reduced by the impacts of continued vehicular use in the area and by mineral exploration and possible coal development.

e. Wildlife

If under this alternative, significant increases in human activity occur in the area as a result of mineral exploration, fuelwood harvesting, or recreational use, it would impact wildlife habitat and result in increased harassment and poaching of wildlife.

A wider range of wildlife habitat management actions would be allowed under this alternative. These management actions could, in the long run, produce a more diverse habitat than the operation of natural processes, which would occur under wilderness management.

The impacts of nonwilderness on the threatened or endangered animal species were assessed in a biological assessment covering bald eagles, peregrine falcons, and black-footed ferrets. It was determined that a nonwilderness designation would have no impact on these species.

f. Cultural

There would be no impacts to possible future research or stabilization methods. Continued vehicular access would create a greater potential for archaeological vandalism. This potential for vandalism would be offset to a degree by the higher levels of BLM patrolling and monitoring that would be possible using vehicles.

If nonwilderness management results in the alteration of the natural context of archaeological sites, it could reduce the scientific potential of the sites. This reduction would result from the loss of information concerning how earlier people related to their surrounding environment.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The Eagle Peak WSA is recommended nonsuitable for wilderness designation.

B. Rationale

Eagle Peak would be very difficult to manage as wilderness due primarily to the existence of 5,640 acres of private mineral inholdings. These private subsurface rights and 440 acres of private and state surface ownership exist in an area with a high favorability for economic coal reserves. This mineral potential and the extent of mineral inholdings in the WSA would severely limit the ability of the BLM to protect wilderness values on surrounding public land.

A boundary adjustment was not considered for this WSA because of the extent and location of private rights. Any boundary adjustment to remove them from the area would produce a WSA with extremely awkward, indefinable boundaries and would severely reduce the area's wilderness characteristics.

C. Consistency with Other Plans

The recommended action for the Eagle Peak WSA does not conflict with any of the decisions in the Divide Planning Area MFP (BLM 1983) or with any known plans of state and local governments or other agencies. Continuing coordination and consultation with other agencies will take place prior to and during the course of the wilderness studies.

APPENDIX C

MESITA BLANCA WSA (NM-020-018)

I. GENERAL DESCRIPTION

A. Location

The Mesita Blanca Wilderness Study Area (WSA) is located in Catron County in west-central New Mexico. It is approximately 4 miles north of U.S. Highway 60 and 20 air miles west of Quemado.

The U.S. Geological Survey (USGS) topographic maps covering the WSA are the Blaines Lake, Goat Springs, Salazar Canyon, and Zuni Salt Lake quadrangles. All of these are New Mexico quadrangles at the 7½-minute scale.

B. Climate and Topography

The WSA has a generally mild, semiarid climate. Precipitation is normally received during the warmer 6 months of the year. Half of the annual average precipitation falls from July through September primarily from brief, but often heavy thundershowers. Winter is usually the driest season. Annual precipitation averages about 11 inches over the entire WSA.

Temperatures in the summer average in the 80's during the days and in the 40's at night. Winter temperatures normally range from the 40's during daylight hours to the low teens at night. Temperature extremes range from -30°F in winter to over 100°F in summer. Mean annual maximum and minimum temperatures for the area are 65°F and 30°F, respectively. The growing season averages 103 days and usually lasts from the middle of June to the end of September. The prevailing winds over the WSA are from the southwest.

The Mesita Blanca WSA is a flat to rolling grassland, broken by isolated sandstone and basalt mesas, which are characterized by vertical cliffs and broken topography. The dominant topographic feature and highest point in the WSA is the Red Hill Cinder Cone and its associated 2,000-acre lava flow. Elevations in the WSA range from 6,400 to 7,679 feet, resulting in an elevation difference of 1,279 feet.

C. Land Status

The WSA contains 16,429 acres of public land and 160 acres of private surface inholdings. (See Map 3 for land status.)

MESITA BLANCA WSA (NM 020-018) EAGLE PEAK WSA (NM 020-019) MAP 3

Legend

- WSA BOUNDARY
- AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

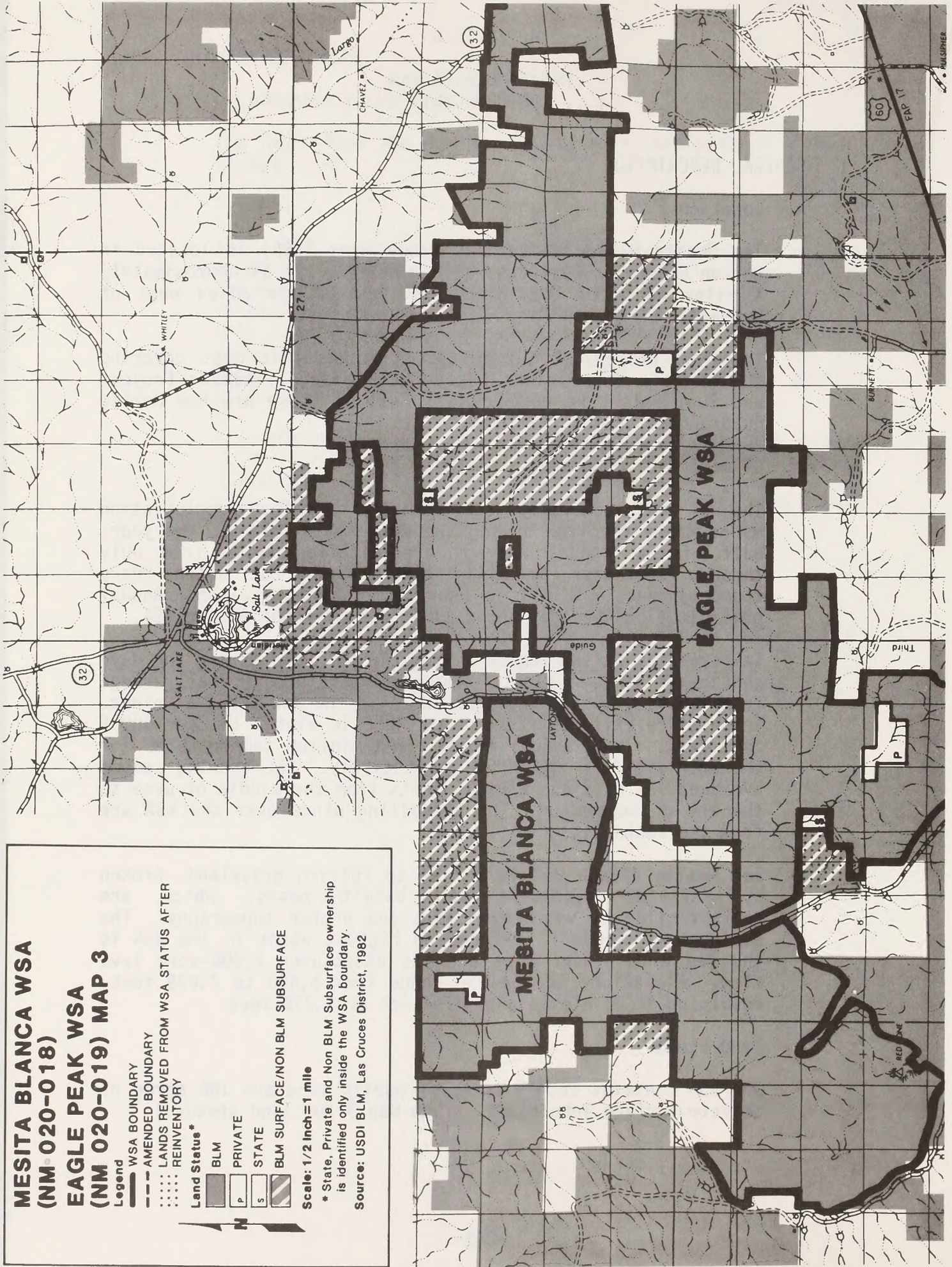
Land Status*

- BLM
- PRIVATE
- STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



D. Access

Mesita Blanca has good physical and legal access. County Road A007 forms a portion of the eastern boundary of the WSA with County Road A005 providing access to the western edge of the WSA. There are also unimproved ranch access routes, which provide east-west access through the southern and northern portions of the WSA.

II. EXISTING RESOURCES

A. Geology

The Mesita Blanca WSA lies within the southern portion of the Colorado Plateau. Gently southeastward dipping sediments of Cretaceous age, primarily the Mesaverde group and Mancos shale, dominate the surficial geology of the WSA. Natural erosion of the sediments has produced mesas of low relief throughout the area. Flows of Quaternary basalts and a few related cinder cones (the most prominent being the Red Hill Cinder Cone) cap portions of the southern extension of the WSA.

Exploration wells drilled within the region provide evidence that Precambrian granite, Permian sediments, and Triassic sediments are present beneath the surficial deposits.

In general, sedimentary rocks, which originally covered exposed Precambrian granite, were regionally uplifted and eroded. These sediments were then, in part, covered with Tertiary volcanic sediments and intruded and capped by Quaternary basalts.

B. Water

1. Surface Water

The Mesita Blanca WSA is located in the Little Colorado River sub-basin. The principal stream system is Carrizo Creek, but neither it nor other minor drainages found in Mesita Blanca, are perennial. Drainage ways are not deeply entrenched and are subject to flash floods following spring snow melt and heavy localized summer thundershowers. Flash floods generally are confined to tributaries and are dissipated in the main streams. Earthen type reservoirs, designed to catch and store runoff, normally contain water 6 months of the year. Quality data for the Little Colorado sub-basin are not available.

2. Groundwater

The source of all groundwater in the Little Colorado sub-basin is precipitation. No groundwater is known to enter the basin from outside areas. Most rock formations present will yield enough groundwater locally to supply livestock needs. The alluvium of stream valleys and bolson fill are the most important groundwater reservoirs in the WSA. The volume of groundwater, available for development in the Little Colorado sub-basin, is huge, but is so distributed as to make recovery in large amounts uneconomical. In general, groundwater from stream-valley alluvium and bolson deposits is of good quality and

suitable for domestic and stock uses. Total dissolved solids average 250 parts per million (ppm), but can range up to 3,000 ppm. Groundwater from intrusive and volcanic rocks is generally of good quality, but tends to be more highly mineralized. In the sedimentary rocks of Cambrian to Cretaceous age, groundwater is usually highly mineralized.



View from Red Hill Cinder Cone.

C. Soils

The soils in this WSA range from shallow to deep, and were formed in a variety of parent materials. About one-third of the area has soils that formed over sandstone and shale. These soils are gently sloping, but have potential water erosion hazards due to the silty textures.

Another one-third of the WSA is characterized by soils that are shallow to deep over basalt flows, basalt-capped mesas, and rolling basalt hills and ridges. About 30 percent of this area is basalt rock outcrop. These soils are clayey and have many rock fragments. The potential erosion hazard is generally low in this area, especially with the protective rock fragments on the surface. The only erosion problems would occur on the steep side slopes.

The rest of the WSA has deep gravelly soils on moderately sloping hills and fans, deep loamy soils in swales, and a small area of soils formed in waterlaid volcanic ash southwest of the Zuni Salt Lake crater. The water erosion hazard in these areas is slight to moderate.

D. Vegetation

1. General

The characteristic vegetation in Mesita Blanca will be described using habitat type terminology. Habitat types are based on the combination of the dominant vegetation species and landform used by the Bureau of Land Management (BLM) Wildlife Management Program to describe the general characteristics of a given habitat. Animals which may commonly be found in each habitat type will also be discussed. In the Mesita Blanca WSA, the following habitat types are present:

Blue Grama-Snakeweed Hill (1,326 acres)

Found on rolling hills bordered by pinyon-juniper woodlands, this habitat type includes blue grama, bottlebrush squirreltail, broom snakeweed, and annual forbs. Also present are fringed sage, winterfat, galleta, dropseed, wolftail, oak, Apacheplume, and scattered pinyon and juniper. The aspect is usually short and mid-grasses, with scattered low shrubs. Animal species that are commonly found in this habitat type include porcupines, striped skunks, mule deer, bobcats, coyotes, pronghorn antelope, turkey vultures, and golden eagles.

Alkali Sacaton-Russian Thistle, Valley (9,316 acres)

This habitat type is found in large, flat bottomlands bordered by pinyon-juniper hills, with annual forbs and grasses also present. Principal plant species include alkali sacaton, western wheatgrass, vine-mesquite, blue grama, galleta, spike muhly, bottlebrush squirreltail, fourwing saltbush, rabbitbrush, winterfat, and annual and perennial forbs. The aspect is usually grassland with scattered shrubs. Animals commonly found in this habitat type include pronghorn antelope, kit foxes, coyotes, striped skunks, and turkey vultures.

Pinyon-Juniper Hill (5,787 acres)

This habitat type is found primarily on low hills next to mountains. Principal plant species include pinyon-juniper, snakeweed, blue grama, fringed sage, winterfat, bottlebrush squirreltail, mountain mahogany, oak, rubber rabbitbrush, sideoats grama, New Mexico feathergrass, needle-and-thread, galleta, little bluestem,

skunkbush sumac, and spineless horsebrush. North- and east-facing slopes usually have more pinyon, juniper, and shrubs, while south- and west-facing slopes contain more grass and low-growing shrubs. Common animal species include coyotes, kit foxes, porcupines, striped skunks, mule deer, bobcats, turkey vultures, red-tailed hawks, and screech owls.

2. Threatened or Endangered Plant Species

No threatened or endangered plant species have been recorded from this WSA. The WSA does contain habitat, which offers potential for the occurrence of eight threatened or endangered plant species. A list of these potentially occurring plants is available on request from the Socorro Resource Area.

E. Wildlife

1. General

Mesita Blanca supports approximately 306 wildlife species. These include 57 reptiles/amphibians, 74 mammal species, and 175 resident and migratory bird species. A complete list of wildlife species occurring in Eagle Peak is available from the Socorro Resource Area. A description of characteristic wildlife species present in the WSA is included in the Vegetation section above.

2. Threatened or Endangered Animal Species

In addition to the characteristic wildlife species present, the WSA has been identified by the U.S. Fish and Wildlife Service as providing potential habitat for the black-footed ferret, a Federal endangered species.

F. Visual

The scenic quality of the majority of the WSA has been rated as Visual Resource Management (VRM) Class III with some areas of Class IV scenery. The higher Class III visual values are derived from the scenic qualities of the Red Hill Cinder Cone and the vertical sandstone and basalt mesas found in the southern and central parts of the WSA. The rolling, grass-covered hills in the northern portion of the WSA were assigned Class IV because of their low scenic quality and lack of visual sensitivity.

G. Cultural

Portions of Mesita Blanca were the subject of a Class II Cultural Resource Survey conducted by the University of Tulsa in 1979. This survey, which covered approximately 5,000 acres in the WSA, identified 53 sites, which ranged from petroglyphs

to rock shelters and villages. These sites represent human habitation from Archaic period to the homesteading era. Of the sites recorded by this survey, seven were considered worthy of nomination to the National Register of Historic Places.

H. Air

Air quality in the region is presently considered good. However, this situation could be altered in the future due to the presence of two coal-fired generating plants in Springerville and St. Johns, Arizona, approximately 30 miles west of the WSA. Air quality is affected at times in the spring, when gusty southwestern winds cause dust to blow.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Leasable

a. Oil and Gas

Although the U.S. Geological Survey (USGS) classifies the area as being prospectively valuable for oil and gas, available information suggests a low favorability.

One Federal noncompetitive oil and gas lease is present within the southwestern portion of the WSA. This lease contains approximately 2,500 acres. Three other leases have been applied for within the central portion of the WSA. These applications cover approximately 10,000 acres. It is probable that most of the Federal mineral estate in this area could be leased noncompetitively. Although no drilling has occurred within the WSA, three dry wells have been drilled locally since 1950. Any positive shows of oil and gas in the region could stimulate exploration attempts within the WSA.

b. Coal

Although no exploration for coal has occurred within the WSA, recent information from nearby areas suggests a high potential for the exploration and discovery of economic coal beds. Private and government exploration in areas 15 miles northeast of the WSA have recently identified economic coal reserves within the Mesaverde group. The Mesaverde group occurs shallowly over approximately two-thirds of the WSA. This recent discovery has stimulated significant industry interest within the area. Evidence of this interest is the fact that in late 1981 the New Mexico State Land Office received almost \$2 million worth of bonus bids for approximately 6,400 acres of coal leases 10 to 15 miles northeast of the northeastern border of the WSA.

c. Geothermal

Moderate geothermal anomalies exist, but represent a very low potential for any exploration or development of geothermal resources.

d. Salt

A New Mexico State salt lease has been active at the Zuni Salt Lake for approximately 40 years. The Zuni

Salt Lake is adjacent to the northwestern extension of the WSA. Despite the lease's longevity, only minor production has occurred at the property. Although low, there is a possibility that exploration for the salt's source could occur within the WSA.

2. Locatable

Within the region, uranium mineralization is associated with the Baca formation and the Point Lookout sandstone of the Mesaverde group. Initial exploration adjacent to the WSA has identified subeconomic uranium mineralization within the Baca formation. The wide spacing of the drill holes used to investigate the area's uranium potential could have left areas of more favorable uranium mineralization undetected. Considering a possible revival of the uranium industry, the WSA has a moderate favorability for economic uranium deposits.

Currently, there is no exploration or development of locatable minerals within the WSA.

3. Saleable

No sales of common variety minerals have been recorded within the WSA. A New Mexico State Highway Department cinder pit has previously been active at the southeastern base of Red Hill Cinder Cone, which lies just outside of the WSA. The prominent Red Hill Cinder Cone, which is within the boundary of the WSA, is composed of excellent cinders and has good access. This deposit would be an excellent source of cinders.

B. Watershed

Mesita Blanca is located within the Blaines Lake and Nations watersheds. Two small areas were identified from the Phase I watershed survey that are in the critical erosion condition class. The critical erosion class indicates a large amount of soil movement and the presence of many rills and gullies. Watershed plans will be developed on the Heap and Goesling allotments within the WSA and watershed work will be done to improve the critical erosion areas to moderate. Runoff in the WSA averages 0.5 to 1 inch per year with erosion amounting to 0.2 to 0.5 acre-feet per square mile per year.

C. Livestock Grazing

The allotments in the WSA are the Rancho Allegre Cattle Company, John and Al Goesling, and Jim Heap. These allottees operate a year-round cow/calf operation. The specific dates of grazing the WSA in relation to the total allotment depends on the availability of forage and the allottee's rangeland

management and livestock management practices. The Rancho Allegre Cattle Company has an ongoing Allotment Management Plan (AMP) developed in cooperation with the BLM.

The day-to-day ranch operations in the WSA consist of checking on livestock condition, forage conditions, availability of livestock water, supplementary salt, minerals, or protein, breaking ice on livestock waters, and performing normal maintenance on fences, pit tanks, and pipelines.

Most of the daily ranch operations are performed using vehicles. Normal maintenance of the rangeland improvements would utilize motorized vehicles such as a pickup truck or a bulldozer to clean pit tanks. A pickup truck would be used to carry needed supplies for maintenance repairs, to transport supplemental feed, and to provide transportation for the allottee when checking on general rangeland and livestock conditions. Livestock grazing potential in the WSA would increase by intensifying grazing management. This would require few additional rangeland improvements. Intensifying grazing management would improve the ecological rangeland condition of the WSA by increasing density and production of desirable climax species.

The allotments, authorized use, and associated rangeland improvements in the Mesita Blanca WSA are shown on Table 1.

TABLE 1

Allotments	Authorized Use (Federal)	Rangeland Improvements
John and Al Goesling	84 AUMs; 7 CYL*	3 miles of fence (2 miles of boundary, 1 mile of interior)
Jim Heap	804 AUMs; 67 CYL	8 miles of boundary fence
Rancho Allegre	1,380 AUMs; 115 CYL	5 miles of fence; 6 miles of pipeline; 4 drinker tubs; 5 pit tanks

Note: *AUMs--Animal Unit Months; CYL--Cows Yearlong

D. Timber Harvest

Mesita Blanca is generally of an open character with scattered pinyon and juniper woodlands, occurring on the ridges, mesa sides, and hilly areas. Most of these woodlands are of small size and volume, occurring in open stands on the steeper terrain of the area. It is estimated that there are

approximately 4,000 cords of standing wood available in the WSA for such things as firewood and fence posts.

These pinyon-juniper stands offer only limited potential as sources of firewood and fence posts, because of their low volumes. This limited potential is reduced further by the location of most of the stands which are not easily accessible by vehicle.

E. Recreation

Existing recreational use in the WSA is low with most current use and potential for future use occurring at the 500-foot high Red Hill Cinder Cone and lava flow.

The WSA offers opportunities for rockhounding and geologic sightseeing. Some deer hunting also occurs, but low game populations (estimated .3 deer per section) limit hunter success. Light levels of off-road vehicle (ORV) use are also associated with these activities in the area.

F. Education/Research

The archaeological resources in the WSA have been the subject of research in the past and offer outstanding opportunities for future research uses.

Opportunities for environmental education in the WSA are derived from geologic features and cultural resources. However, the distance from population centers reduces the likelihood that this area will be used for environmental education by institutions.

G. Native American

There are no known Native American religious or cultural uses in the WSA. Mesita Blanca is located approximately 5 miles southwest of Zuni Salt Lake, an important Native American religious and cultural site. However, it is not known at this time if religious uses, centered at Zuni Salt Lake, also take place inside the WSA.

H. Realty Actions

No applications for rights-of-way or easements have been received, nor is any public land withdrawn within the WSA.

I. Wildlife

The potential of this area as wildlife habitat could be enhanced by creating additional water sources and through vegetation manipulation such as the seeding of browse species.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of Mesita Blanca is impacted primarily by rangeland improvements, which support livestock grazing in the WSA. These impacts are not typically screened by topography or vegetation and many are visible over a wide area in the WSA.

Mesita Blanca contains 9 livestock watering structures (earthen and metal tanks), 6 miles of buried pipeline, and 16 miles of fences. Access to these rangeland improvements is provided by approximately 20 miles of vehicle routes.

The human impacts in Mesita Blanca result from ranch operations. Some of the access routes would be closed, and would return to a natural condition as a result of wilderness management. Other routes would continue to be used occasionally by the allottee to perform necessary maintenance of rangeland improvements. These routes would continue to be visible, but would become less of an impact due to reduced use under wilderness management.

The cumulative effects of the rangeland improvements and the general lack of topographic and vegetative screening are considered to reduce the level of perceived naturalness in the Mesita Blanca WSA.

b. Solitude

The degree of solitude is determined by the opportunities a person has to avoid the sights, sounds, and evidence of other people within the WSA.

The size and configuration of the WSA would allow users to find secluded spots. Because of the open character of much of the WSA, opportunities for solitude would be highest in areas with some degree of topographic and vegetative screening. Those areas would be found primarily in portions of the lava flow from the Red Hill Cinder Cone and along the bases of the isolated mesas, which occur in the WSA. The mesa tops and the Cinder Cone itself, because of greater visibility, would offer less chance of avoiding the evidence of human activities both inside and outside the WSA.

Outside sights and sounds may affect the feeling of solitude in portions of Mesita Blanca. The WSA is bordered on two sides by county roads. A 345 KV transmission line is located west of the WSA and is visible from higher points in the WSA as is a smaller transmission line, which is cherry-stemmed about $\frac{1}{2}$ -mile into the east side of the WSA. Large erosion control dams and an abandoned gravel pit along the eastern boundary also reduce the feeling of being alone.

c. Primitive and Unconfined Recreation

During the wilderness inventory, Mesita Blanca was not found to possess outstanding opportunities for primitive recreation. Opportunities for primitive or unconfined recreation were not considered outstanding in the WSA, because the terrain in the WSA is common to the region and it lacks the visual interest of lands to the north and east. The opportunities for recreation that do exist in the WSA, consist primarily of geologic sightseeing, hiking around the Red Hill Cinder Cone and lava flow, rockhounding, and some deer hunting. There is little known recreation use in the WSA other than around the Red Hill Cinder Cone.

2. Special Features

Geological features and archaeological resources in the WSA are considered significant.

The WSA contains a high density of archaeological sites representing human habitation from archaic to historic times. Seven recorded sites in the WSA are considered eligible for nomination to the National Register.

The 500-foot high Red Hill Cinder Cone is a dominant feature in the landscape of the region. It represents a classic volcanic cinder cone and lava flow. The lava flow covers approximately 2,000 acres and contains numerous interesting lava features.

3. Multiple Resource Benefits

Congressional designation as wilderness would carry the weight of law and would provide a greater degree of long-term protection for the natural and cultural values which exist in Mesita Blanca than would the administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits provided by wilderness designation may be found

in the impacts section, Chapter VI, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

Ecosystem and landform diversity was classified using the Bailey (1976) - Kuchler (1966) system to identify the potential natural vegetation expected to occur in designated wilderness areas and WSAs in the state. Further comparison at the regional and national levels will occur in preparation of the Environmental Impact Statement (EIS) and wilderness study report.

The Bailey-Kuchler system classifies the Mesita Blanca WSA as being within the Colorado Plateau Province with a potential natural vegetation of 5,787 acres of pinyon-juniper woodland and 10,642 acres of grama-galleta steppe.

b. Distance to Population Centers

The WSA is within 5 hours driving time from Albuquerque, New Mexico.

B. Manageability

To be recommended for wilderness designation, Mesita Blanca must be capable of being effectively managed as wilderness. Manageability is a judgment made by the BLM after considering such things as: private and state inholdings, valid existing rights, topography, and the overall land ownership pattern.

Manageability of the WSA as wilderness would be complicated by an awkward boundary configuration and a lack of readily identifiable terrain features to delineate the boundary or to provide natural barriers to ORV travel. These factors would require fencing or a system of signs and cairns to delineate the boundaries of the wilderness area in order to reduce trespass problems.

Private surface inholdings in Mesita Blanca would not pose serious problems for wilderness management. There is a 160-acre private inholding which could require reasonable access. This access may not significantly affect wilderness values nor pose serious problems for wilderness management.

Another issue for wilderness management of Mesita Blanca would be the impacts of valid existing rights. These rights, which include the maintenance of "grandfathered" rangeland improvements and necessary vehicular access for ranch operations, are not expected to create serious manageability

problems themselves, but would result in the continued existence of human impacts in the WSA.

If the area is designated wilderness, visitor use in the area would probably be concentrated around the Red Hill Cinder Cone. The area has very little recreational use now, but these levels could increase. Concentrations of use around the Cinder Cone could create management problems. If this occurs, management actions would be needed to preserve the solitude of the area.

Wilderness management would require limiting vehicular access to the rancher for necessary ranch operations. This could prove difficult in portions of the WSA, where topography does not present natural barriers to vehicular access or provide well defined WSA boundaries.

The Zuni Salt Lake coal field is believed to underlie much of the land within and surrounding the WSA. There has been recent interest in coal in this region as a result of the construction of two coal-fired generating stations in Arizona, approximately 30 miles west of the WSA. The potential for development of coal bearing formations in lands surrounding the WSA is unknown at this time; but if suitable conditions occur, development could result. If development occurs on the periphery of the WSA, it would reduce the ability of the BLM to manage the area as wilderness.

Areas 10 to 15 miles northeast of the WSA are being leased for coal development. If regional coal development occurs, it could complicate wilderness management of this area by increasing traffic along County Road A007 on the eastern boundary of the WSA. This would increase the impact of outside sights and sounds in the WSA and increase the likelihood of trespass problems inside the designated area.

V. PUBLIC INVOLVEMENT OVERVIEW

This report was prepared after considering public input obtained from a variety of sources, including mass mailings, public meetings, open houses, and personal contacts. These efforts began during the wilderness inventory phase and will continue during the preparation of the statewide wilderness EIS.

Opposition to wilderness status for Mesita Blanca has centered around conflicts with mineral and livestock interests. A large number of Catron County residents have also expressed opposition to additional wilderness areas in Catron County. Reasons for opposition included the following: the lack of naturalness of the area due to rangeland improvements; lack of wilderness values; conflicts with possible future mineral development; possible adverse impacts on future rangeland improvements and livestock operations; and impacts of wilderness designation on future economic development of Catron County.

Support for wilderness designation has come from recreation, conservation, and preservation interests. Reasons cited include: underrepresentation of landforms and grasslands in the WSA in the National Wilderness Preservation System; need to preserve raptor habitat; and existence of high cultural resource values. The lack of conflict between wilderness management and livestock operations and the lack of timber resources in the WSA were also noted.

VI. ALTERNATIVES AND IMPACTS

This section will discuss two alternatives and their impacts: All Wilderness and No Action/No Wilderness.

A. All Wilderness

Under this alternative, the entire 16,429-acre WSA would be recommended suitable for wilderness designation.

1. Impacts to Minerals

The WSA contains formations which have a high favorability for discovery of economic coal reserves, a moderate favorability for economic uranium deposits, and excellent cinder deposits.

The exploration, development, and production of those minerals actually present in the WSA would be impacted by wilderness designation. The nature of the impacts would vary with the category of minerals.

a. Leasable

Under existing laws, wilderness designation would preclude the issuance of new mineral leases.

Mesita Blanca has high favorability for containing economic coal reserves. Anticipated future demands to explore for and develop these reserves would be forgone by wilderness designation.

The WSA has low favorability for the discovery of oil and gas or geothermal resources. Because of the low favorability for economic occurrences of oil and gas, or geothermal resources, wilderness designation would not result in significant impacts to these resources.

b. Locatable

After wilderness designation, development work, extraction, and patenting would be allowed to continue only on valid claims. No new prospecting and exploration under the mining laws would be allowed.

Presently, there are no known mining claims in Mesita Blanca. If any claims are filed in the WSA and if a valid discovery is made prior to wilderness designation, it could be developed. If no discovery is made, wilderness designation would preclude further development of the claims.

In Mesita Blanca, it is likely that any claims filed would be for uranium. Although the area is favorable

for uranium mineralization, present information would suggest little impact on nationwide uranium production since large areas with similar potential are open to exploration and development.

c. Saleable Materials

No permits to remove materials such as sand and gravel or cinders would be issued in designated wilderness areas. There are excellent sources of cinders and sand and gravel in the Mesita Blanca WSA. In spite of this potential, wilderness designation would not affect local supplies since many alternate sources are found in the vicinity of the WSA.

If the area is recommended suitable for wilderness designation, additional mineral surveys would be conducted by the USGS and U.S. Bureau of Mines to augment current information. These additional mineral surveys would be considered before a final decision on wilderness designation is made by Congress.

2. Impacts to Other Resources and Uses

a. Livestock Grazing

The WSA presently supports 2,268 AUMs; these existing levels of livestock use and the maintenance of "grandfathered" rangeland improvements are valid existing rights and would continue under wilderness management. Although grazing is a permissible and compatible activity in wilderness, limitations on vehicular access, types of construction materials, and location of developments would be necessary to protect wilderness characteristics.

It is difficult to assess how these limitations would affect grazing management in the WSA because the nature and location of future rangeland improvements are not known. However, based on such factors as the existing ecological rangeland condition, present livestock distribution problems, and the potential of the range sites, it is anticipated that few additional rangeland improvements would be needed to improve grazing management in the WSA. For this reason, it is felt that wilderness designation would not have significant impacts on livestock grazing in the WSA.

It should also be noted that in many cases wilderness designation would limit, but not preclude, rangeland management actions and that impacts would result from limitations on design and placement, rather than the prohibition, of new rangeland improvements.

Wilderness designation would result in the modification of the current AMP for Rancho Allegre and the development and implementation of AMPs for the John and Al Goesling and Jim Heap allotments. These AMPs would specify the nature and type of motorized access, timetables for cyclic maintenance needs, types of construction materials, and other measures necessary to support livestock grazing while protecting wilderness values.

If this region experiences a population increase as a result of possible coal development north of the WSA, the impacts to livestock operations from closing the area to unauthorized vehicle use could be substantial.

b. Timber Harvest

Approximately 4,000 cords of firewood and other wood products would be excluded from the area's available woodlands. This would reduce available sources of firewood and fence posts to a limited degree since these areas are of low volume and have poor access.

c. Watershed

Watershed management actions to reduce erosion in a critical watershed management area would be impacted by wilderness designation. Structural and treatment measures, including the construction of detention dams, pinyon-juniper removal, and watershed tillage would be restricted under wilderness management.

Over time, wilderness management would protect watershed values by reducing surface disturbance and preserving the natural ground cover in the WSA. These impacts could be substantial if regional coal development occurs. Under these circumstances, it is expected that wilderness management would preclude increased ORV use in the area. This would reduce watershed problems resulting from ruts and vehicle scars and subsequent erosion.

d. Recreation

Recreation activities which require motorized vehicles would be impacted by wilderness designation. In Mesita Blanca, this would primarily affect rockhounds who drive to collecting areas and some deer hunters who drive into camping areas. Recreational use of the Red Hill Cinder Cone would not be affected, since the road, which provides access to the base of the Cinder Cone, is not inside the WSA.

By preserving the natural values and solitude which exist in Mesita Blanca, wilderness designation would also ensure that the limited opportunities for primitive recreation now present in the area would continue to be available to meet future needs.

e. Wildlife

Wilderness designation would limit, but not preclude, management actions designed to improve wildlife habitat such as vegetation manipulation and the construction of additional water sources.

There would be few short-term impacts of wilderness designation on wildlife in Mesita Blanca. The impacts, derived from the elimination of vehicular access, would include reduced potential for harassment and poaching of wildlife and a reduction in hunting pressure.

Over the long-term, wilderness management would serve to protect the natural values, including the natural distribution and abundance of wildlife species, which presently exist in the area. These long-term impacts would increase significantly if the region is found to be suitable for coal production. This would accelerate the human impacts in the area and increase the value of undisturbed areas for wildlife habitat.

The impacts of wilderness designation on threatened and endangered animal species were analyzed in a biological assessment covering black-footed ferrets. Under this alternative, the black-footed ferret would not be impacted.

f. Cultural

Mesita Blanca contains a high density of archaeological sites, representing at least 8,000 years of human habitation. The elimination of motorized access would reduce the chance of professional pothunting.

While archaeological resources are protected by law, wilderness designation could aid long-term efforts to protect specific sites and would enhance scientific and educational values, by preserving the natural setting of the archaeological resources present in the WSA.

g. Wilderness Values

Wilderness management would ensure the preservation of Mesita Blanca's existing natural character and would

maintain the opportunities for solitude which exist in the WSA. The archaeological sites, geologic features, and vegetation present in Mesita Blanca would be protected in a natural environment for enjoyment and study by present and future generations.

C. No Action/No Wilderness

This alternative is a No Wilderness Alternative and represents management according to the decisions contained in the Divide Planning Area Management Framework Plan (MFP) (BLM 1983).

1. Impacts to Wilderness Values

If the area is not designated wilderness, the most probable uses of the area would be continued livestock grazing, woodcutting, and mineral exploration. Mineral development could occur within the WSA, if economically significant deposits were found. Levels of human impacts in the area could increase in the future as the result of escalating demands for firewood and probable coal development utilization.

The degree to which minerals exploration and development might occur in the WSA is not possible to predict at this time. However, some general statements about the impacts of minerals exploration and development are possible. If significant levels of mineral exploration and development occur, they could result in the disruption of the habitat of large raptors, pronghorn antelope, deer, mountain lion, and other wildlife species. Impacts to visual resources and a reduction of the opportunities for solitude could also occur. There would also be an increased potential for impacts to cultural resources in the area.

Over time, continued unrestricted vehicular access into the area could also impact natural values. These impacts would occur as new routes were created to new rangeland improvements, firewood cutting areas, to support mineral exploration, or as a result of recreational use.

Management actions, calling for varying degrees of vegetation manipulation, water developments, and rangeland improvement structures have been identified by the wildlife, range, forestry, and watershed programs. The individual projects, designed to improve both livestock and wildlife habitat and reduce erosion, would not significantly affect wilderness values. The cumulative effect of these projects would impact wilderness characteristics.

2. Impacts to Other Resources and Uses

a. Livestock Grazing

Under this alternative, no immediate impact on livestock operations in the WSA would occur. There could be indirect impacts, if coal development occurs in the region. This would increase the population of the area, and continued unrestricted vehicular access under non-wilderness management could result in increased problems for the livestock operator. There would be no impacts on rangeland program recommendations, which call for rangeland management actions to improve rangeland conditions and forage production. These actions would include vegetation treatments, fenced study plots, seeding trials, and rangeland improvements. For more information on these proposed actions, see the West Socorro Rangeland Management Program EIS (BLM 1982) on file at the Socorro Resource Area.

b. Timber Harvest

An estimated 4,000 cords of firewood and fence posts, which exist in the WSA, would be included in the overall management of woodland products as specified in the Divide Planning Area MFP (BLM 1983) and West Socorro Rangeland Management Program EIS (BLM 1982). Forest management actions, specified in these documents, would make the woodlands in Mesita Blanca available as possible firewood or fence post sale areas. This would not significantly increase the total amount of these products available to the region.

c. Watershed

Watershed management actions including watershed tillage and water control structures would be conducted as described in the Divide Planning Area MFP (BLM 1983). The specific locations and numbers of projects have not been determined at this time. They would be identified in a watershed plan to be developed for the area.

Continued vehicular access for ranch operations, recreation, mineral exploration, and woodcutting could result in additional ruts and vehicle scars and increase localized erosion. If mineral development occurs in the area, the resulting surface disturbance could also reduce watershed quality.

d. Recreation

There would be no impacts to present low levels of recreational use. Access to the Red Hill Cinder Cone (the major recreational resource in the WSA) would not be affected under this alternative, since the present access route is outside the WSA boundary.

Unrestricted vehicular access could produce additional vehicle scars and increased evidence of other uses in the area. This would reduce scenic qualities and opportunities for primitive recreation.

If possible coal development results in increased population in the region, the area could experience an increase in various forms of vehicle-dependent recreation. The attractiveness of the WSA for recreational uses would be significantly reduced if coal development occurs inside the present WSA boundary.

e. Wildlife

If under this alternative, significant increases in human activity occur in the area as a result of mineral exploration, fuelwood harvesting, or recreational use, it could impact wildlife habitat and result in increased harassment and poaching of wildlife.

A wider range of wildlife habitat management actions would be allowed under this alternative. These management actions could, in the long run, produce a more diverse habitat than the operation of natural processes, which would occur under wilderness management. The impacts of a nonwilderness designation on black-footed ferrets were analyzed in a biological assessment. Under this alternative, no impact on the species would occur.

f. Cultural Resources

There would be no impacts to possible future research or stabilization methods. Unrestricted vehicular access would continue the potential for archaeological vandalism.

If nonwilderness management results in the alteration of the natural context of archaeological sites, it could reduce the scientific potential of the sites. This reduction would result from the loss of information concerning how earlier people related to their surrounding environment.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The recommended action for the Mesita Blanca WSA is the No Action/No Wilderness Alternative. The entire 16,429-acre WSA is being recommended nonsuitable for wilderness designation.

B. Rationale

During the wilderness inventory, the wilderness values of Mesita Blanca met the minimum requirements for WSA status. Further evaluation during the study phase indicated that the quality of the WSA's wilderness values were not high.

Mineral information developed during wilderness study and recent interest in leasing coal northeast of the WSA indicate that Mesita Blanca has a potential for coal development.

The marginal wilderness values of the WSA and the conflicts with possible coal development are the primary reasons the Mesita Blanca WSA is being recommended nonsuitable for wilderness designation.

C. Consistency with Other Plans

The recommended action for the Mesita Blanca WSA does not conflict with any of the decisions in the Divide Planning Area MFP (BLM 1983) or with any known plans of state and local governments or other agencies.

Continuing coordination and consultation with other agencies will take place prior to and during the course of the wilderness studies.

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APPENDIX D

ADEN LAVA FLOW WSA (NM-030-053)

I. GENERAL DESCRIPTION

A. Location

The Aden Lava Flow Wilderness Study Area (WSA) is located in the southwest quarter of Dona Ana County, 21 miles southwest of Las Cruces, New Mexico, and 45 miles northwest of El Paso, Texas. The WSA lies northeast and east of the West Potrillo Mountains and Mount Riley WSAs.

The U.S. Geologic Survey (USGS) topographic maps covering the WSA are the Noria, Afton, Mount Riley, and Aden, New Mexico, quadrangles. All of these maps are at the 15-minute scale.

B. Climate and Topography

The Aden Lava Flow WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is around 8 inches. A wide variation in annual totals is characteristic of arid climates as illustrated by annual extremes of 19.60 and 3.62 inches recorded at New Mexico State University during a 74-year period of record. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is slightly above 90°F. In January, the coldest month, the average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west and may exceed 30 mph in the afternoons.

The majority of the WSA (about 77 percent) is comprised of the Aden Lava Flow. The lava flow is a nearly flat landform with average elevations ranging from 4,225 to 4,300 feet. The interior relief of the flow, however, is extremely varied. Steep-walled holes in the lava occur in varying shapes and sizes. The larger holes are 100 feet in diameter and 40-50 feet deep. Crevices up to 5 feet wide and 20-30 feet deep are

numerous. Other ministructures within the flow include pressure ridges and lava tubes.

The Aden Crater and Afton volcanoes are the most prominent topographic features in the lava flow. Aden Crater, in the northwest part of the WSA, is nearly circular with an interior depression about one quarter of a mile in diameter. The Afton volcanoes are a cluster of three resurgent volcanoes in the southeast part of the WSA.

The south-central part of the WSA outside of the lava flow is generally flat with rolling sand dunes.

C. Land Status

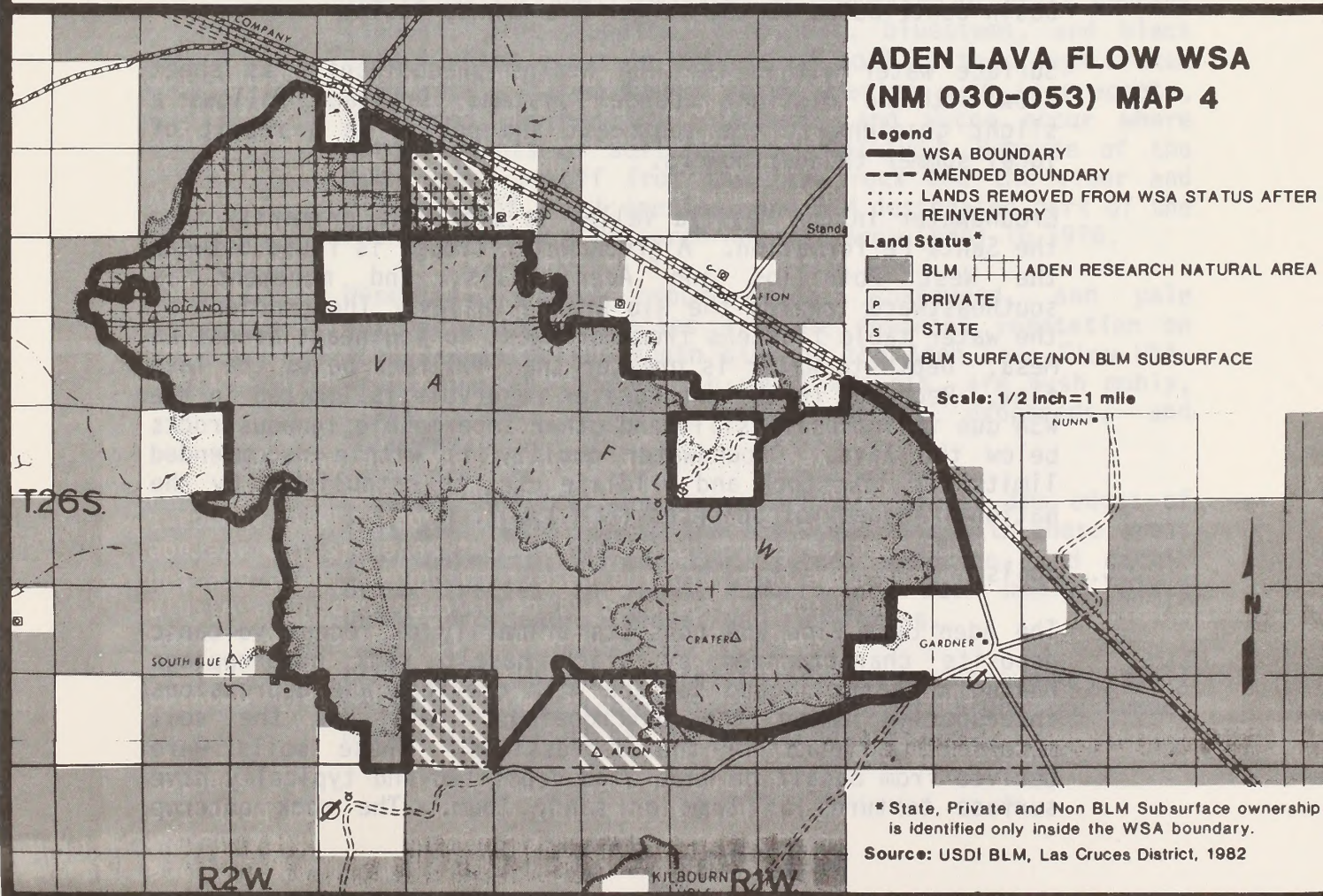
The WSA contains 23,857 acres of public land. There are no state or private inholdings. (See Map 4 for land status.)

D. Access

The Aden Lava Flow WSA is legally accessible from County Roads B02 and A19, which form portions of the northeastern and eastern boundaries. Ranch roads along the northwestern, western, and southern boundaries all cross state and private lands for which there is no legal public access.



Looking west from the Aden Crater.



II. EXISTING RESOURCES

A. Geology

The Aden Lava Flow WSA is located within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake deposits.

Locally, the WSA lies within a major structural intermontane basin known as the Mesilla Bolson and is within the Rio Grande Rift system. Main features of the Mesilla Bolson are coppice sand dunes, wind-blown depressions, low relief volcanic craters, and basalt flows and cinder cones.

The Aden Lava Flow covers approximately 30 square miles and consists of thin vesicular basalt flows with associated shield, spatter, and explosion-collapse craters and depressions. The Aden Lava Flow is underlain by Quaternary bolson fill and marine sediments of the Paleozoic and Mesozoic eras. These marine sediments are not exposed at the surface.

B. Water

The Aden Lava Flow WSA is situated within the highlands of the Mesilla Basin. Commonly referred to as La Mesa, the Mesilla Basin contributes to the larger Rio Grande Basin.

Surface water within the WSA drains predominantly as sheet flow with no distinct channel system. Drainage follows a slight gradient to the southeast and occurs as a result of local summer thundershowers.

Groundwater in the Mesilla Valley is available primarily from the Santa Fe formation. A groundwater trough is found between the West Potrillos and Aden Hills, and movement is southeastward towards the Rio Grande Valley. The gradient of the water table flattens from northwest to southeast across La Mesa. Depth to water is greater than 400 feet below the lava flow. Recharge to the groundwater reservoir is limited in the WSA due to intrusive sills and other impermeable igneous rocks below the lava. Groundwater quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The Aden Lava Flow WSA consists primarily of recent volcanic deposits characterized by black basalt rock outcroppings having a sharp, jagged surface with crevices and depressions interspersed among the outcroppings. Most of the soil material is found in the depressions. These soils were derived from basalt or were wind deposited and typically have surface textures of loam or sandy loam. The rock outcrop

sheds water to these soils, thereby increasing the effective precipitation to these soils.

On the east side of the WSA, there is a lesser amount of exposed rock and the soils typically are shallow and sandy over caliche coated basalt bedrock. These soils are usually gravelly on the surface.

D. Vegetation

1. General

Vegetation and associated range sites within the Aden Lava Flow WSA consist of four major types:

Vegetation Types	Range Sites	Federal Acres
Grass-mixed desert shrub	Malpais (lava flow)	18,373
Mesquite	Sandy	3,879
Creosote	Shallow sand	1,261
Grass-mixed desert shrub	Bottomland (swale)	344

The malpais (lava flow) area is comprised of grass species (tobosa, vine-mesquite, dropseeds, bluestems, and black grama) which occur in pockets of soil in the rough broken lava rock. Mixed desert shrub species such as creosote, snakeweed, Mormon tea, tarbush, and yucca occur where large amounts of soil have accumulated. Because of the high water runoff from the lava rock and the vigor and diversity of plant species, the BLM designated part of the Aden Lava Flow a Research Natural Area (RNA) in 1978.

Mesquite, yucca, broom dalea, snakeweed, and pale wolfberry shrub species are the dominant vegetation on sandy areas on the south side of the Aden Lava Flow WSA. Grass species, present in small amounts, are bush muhly, black grama, other gramas, tobosa, dropseeds, and threeawns.

Creosote shallow sand areas are all around the edges of this WSA. Other shrub species associated with these areas are snakeweed, Mormon tea, yucca, mesquite, and cacti. Grass species in small numbers are bush muhly, black grama, dropseeds, tobosa, and fluffgrass.

Deep soils in the bottomland (swale) areas support small dense stands of tobosa grass. Invading shrubs are sumac, Mormon tea, mesquite, tarbush, and snakeweed.

2. Threatened or Endangered Plant Species

The following species was identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

E. Wildlife

The Aden Lava Flow WSA is mainly a lava habitat site (77 percent). Small areas of other habitat sites found at the outer edges are mesquite sand dune, snakeweed, and creosote.

The Aden Lava Flow exhibits a number of valuable and interesting wildlife features. The edge of the flow is an ecotonal area which has an overlap of species from both the lava and the surrounding desert. There also may be species typical of the ecotone itself.

Vent tubes and the many crevices found in the lava provide escape cover and den sites for wildlife. Bats are numerous because of the good habitat; there are 12 species identified from the lava flow. Wide-ranging carnivores can live within the flow and move out into the desert to hunt. There are ten carnivore species found in the lava flow; seven is the average number for desert ranges. Rodents and rabbits are abundant around the edges of the lava flow because there is soft sand for burrowing, vegetation for feeding, and the nearby escape cover of the lava flow.

There are many depressions in the lava flow which collect rainwater. The vegetation in these depressions is denser than that of the lava flow or the surrounding desert. These areas are particularly important for the bird life of the WSA because they provide more food and cover than any other part of the WSA. Outside the lava flow, soaptree yuccas are fairly common. These are important for nesting raptors, particularly Swainson's hawks (BLM 1976). There are high densities of raptors in the surrounding desert, especially in the winter (BLM 1981). It is likely that high rodent prey densities, such as those at the edge of the flow, partially account for this.

A phenomenon peculiar to lava flows is that many animals living on them exhibit melanism, or protective dark coloration. Two melanistic species, the rock pocket mouse and the black-tailed rattlesnake, have been found in the WSA. Both are rock-dwelling animals which are isolated to the lava flow by the surrounding desert (BLM 1976).

F. Visual

Two scenic quality rating units (SQRUs) describe the Aden Lava Flow WSA. The Aden Crater and Lava Flow are seen as one rating unit with a Class B or moderate scenic quality rating. The lava flow has a broken irregular surface which is low in profile and horizontal in form. The Crater rises above the lava flow to an elevation of 4,300 feet, and has a flat-topped conelike form. Pockets of soil support scattered vegetation. There is some degree of color contrast between the dark brown and black colored lava rock and the dark greens and light browns of the vegetation.

The south-central part of the WSA is an area of flat to gently rolling desert with a Class C scenic quality rating. The green, tan, and gray colors of creosote, mesquite, yucca, and grasses offer some contrast with the orange-brown sand dunes. This scenery is common within the region.

Approximately 20,681 acres of the WSA (the Aden Crater and Lava Flow) fall into a Visual Resource Management (VRM) Class III. The remaining 3,176 acres in the south-central part of the WSA are in a Class IV.

G. Cultural

There are no known cultural sites in the Aden Lava Flow; however, there has been very little survey in the area. There is a major paleontological site in the Aden Fumarole which may still contain significant deposits (see Chapter III, Education/Research).

H. Air

Generally, the quality of air within the Aden Lava Flow WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

Since no major industrial or population centers are located in the nearby vicinity, the only major degradation of air quality occurs during the spring months (March-May). West-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Aden Lava Flow WSA. There are currently 2 Federal oil and gas leases, 13 oil and gas lease applications, and 2 geothermal lease applications on parcels located within the WSA boundary.

The oil and gas potential for the Aden Lava Flow WSA is considered poor. Extensive volcanism in the immediate area may preclude potential oil and gas accumulations, however, petroleum source rocks could occur at depth.

The recent volcanism of the Aden Lava Flow and the occurrence of subsurface hot water and higher than normal temperature gradients at Kilbourne Hole due south of the lava flow all indicate geothermal potential in the vicinity of the WSA. However, industry (Hunt Energy 1982) has indicated that water temperatures in the area are not hot enough and at the present time, do not represent economically exploitable geothermal resources.

Currently, a Research Natural Area (RNA) exists within the Aden Lava Flow and carries a protective stipulation that limits surface occupancy for energy minerals activities. (See Map 1 for general location of the RNA.) Planning documents recommend continuing leasing with a No Surface Occupancy (NSO) stipulation for the RNA (BLM 1983). No other stipulations are proposed.

2. Non-Energy Minerals

Thin slabs of volcanic rock (basalt) occur in the WSA. This rock is desirable as a decorative and structural stone because little or no work is needed to upgrade the stone to a finished product. The potential for development of this rock is low to moderate because of the long distance to market.

B. Watershed

Water use within the Aden Lava Flow WSA is primarily by livestock and wildlife. A dirt tank located on a small arroyo is within the WSA.

The WSA lies within the Lower Rio Grande declared underground water basin and ground water use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of two grazing allotments are present within the Aden Lava Flow WSA. Livestock grazing is limited on the west side of this WSA due to the rough, broken terrain of the lava flow. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
Kilbourne Hole 3023	85,488	5,760	6,828	8%
R. Cosimati 3056	22,000	1,284	17,029	77%
TOTAL			23,857	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
Kilbourne Hole 3023	interior fence	1 mile
R. Cosimati 3056	dirt tank interior fence	T. 26 S., R. 1 W., Sec. 14 4 miles

Boundary Fence: Kilbourne Hole 3023 and R. Cosimati 3056 8 miles

3. Potential Rangeland Developments

PROPOSED RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location ^{b/}
R. Cosimati 3056	pipeline	1½ miles-T. 26 S., R. 2 W., Secs. 1, 12
	trough	T. 26 S., R. 2 W., Sec. 12
	pipeline	1 mile-T. 26 S., R. 2 W., Secs. 14, 15
	trough	T. 26 S., R. 2 W., Sec. 14
	pipeline	1½ miles-T. 26 S., R. 1 W., Secs. 17, 18
	trough	T. 26 S., R. 1 W., Sec. 18
	pipeline	1 mile-T. 26 S., R. 1 W., Sec. 23
	trough	T. 26 S., R. 1 W., Sec. 23

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

^{b/}Locations of proposed rangeland developments are tentative.

D. Recreation

Aden Crater is visited for its scenic and geologic values. The vehicle trail through the southeast part of the WSA is used as a scenic drive. Vehicle trails along the eastern perimeter of the lava flow are used by off-road vehicle (ORV) enthusiasts. The area around the lava flow is hunted for small game. The lava flow itself receives almost no hunting pressure due to its roughness. The Aden Fumarole is the only known cave in the WSA (see Chapter III, Education/Research). The fumarole contains a 120 foot pit. Rockhounds collect lava rock in the area. Small game hunting, ORV use, and weekend sightseeing comprise the majority of recreation uses in and around the WSA.

E. Education/Research

An area of 4,008 acres in the northeast part of the Aden Lava Flow was designated a RNA in 1978. Even before this designation, a great deal of research was done in the lava flow. Marsha McKinnerney, Dr. William Reid, and Dr. Richard Smartt of the University of Texas at El Paso have done various studies on carnivores, bats, and other mammals in the lava flow. A number of researchers (Koschmann 1972; Lewis 1951; Prieto and Jacobson 1968; Benson 1932, 1933) have studied melanistic rodents and reptiles in the Aden Lava Flow.

Dr. Reid is also studying the plant-soil relationships in this area and hopes to do further work. A wide spectrum of biological and geological studies is possible in the future since part of the area is a RNA.

A nearly complete, well-preserved giant ground sloth was found in the Aden Fumarole in the late 1920's. The specimen can be seen in the Yale Peabody Museum. Other fumaroles could contain well-preserved late Pleistocene fossils.

The RNA has been designated limited to existing roads and trails for ORV use. No motorized cross-country travel is allowed.

F. Wildlife

There are two quail guzzlers just outside the boundary of the Aden Lava Flow WSA, one on the northwest and one on the northeast side. They are close enough to be water sources for wildlife which live on the lava flow.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The imprints of man within the 23,857-acre Aden Lava Flow WSA are minimal, consisting of 14 miles of fence and 6 miles of two-track vehicle trails.

The fences transect the area north-south and east-west. All have wooden posts which blend in well with the landscape. With the exception of 3 miles of trail extending across the southeast one-third of the WSA, the vehicle trails are located along the perimeter of the lava flow. All of the trails are short and screened topographically.

Due to the low impact and dispersed location of these imprints in relation to the large size and rugged interior relief of the WSA, the cumulative impacts on naturalness are minimal. The quality of the WSA's naturalness is exceptional.

b. Solitude

The varied and rugged interior relief of the Aden Lava Flow provides outstanding opportunities for solitude throughout the WSA.

These opportunities are further enhanced by the large size and blocked-up configuration of the WSA. The WSA is approximately 7 miles long and 7 miles wide. Foot access into the area is available from all directions. The size, shape, and accessibility of the area would enable visitors to disperse throughout the WSA to avoid the sights and sounds of others.

Opportunities for solitude are somewhat impacted by the cherry-stemmed road into the Crater. As visitor use increases, opportunities for solitude in the Crater would diminish proportionately.

Opportunities for solitude are also occasionally impacted by the outside sounds of trains on the Southern Pacific Railroad along the northeast boundary of the WSA. These impacts are not significant.

Overall, the quality of solitude opportunities in the WSA is excellent.

c. Primitive and Unconfined Recreation

Primitive recreation opportunities in the Aden Lava Flow WSA include hiking, backpacking, nature study, and small game hunting. During the intensive inventory, these opportunities were judged to be less than outstanding.

2. Special Features

The Aden Lava Flow contains special ecological and geological features. The area is important from a scientific and educational point of view to study the interactions and interrelationships of the area's geology, soils, flora, and fauna. A portion of the area was designated a Research Natural Area (RNA) in 1978 (see Map 4 for a general location of the RNA). Much research has been conducted in the RNA and future projects are planned (see Chapter III, Education/Research).

The Aden Lava Flow exhibits typical lava flow topography (see Chapter I, Climate and Topography). Depressions in the lava flow collect soil and rainwater (see Chapter II, Soils). In these depressions, plant vigor is good and there is a wide diversity of species (see Chapter II, Vegetation). In addition, parts of the lava flow are ungrazed due to the rough topography (see Chapter III, Livestock Grazing). The area provides habitat for the night blooming cereus, a Bureau sensitive plant species proposed for Federal listing (see Chapter II, Vegetation).

A diverse wildlife community is also associated with the lava flow due to the overlap of species from the lava flow and the surrounding desert. Some species exhibit melanism or dark protective coloration (see Chapter II, Wildlife).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Aden Lava Flow WSA as being in the Chihuahuan

Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
grama-tobosa shrubsteppe	18,717
mesquite-acacia savanna	3,879
creosote	1,261

b. Distance from Population Centers

The Aden Lava Flow WSA is approximately 1 hour driving time from El Paso, Texas; 1 hour from Las Cruces, New Mexico; 5 hours from Albuquerque, New Mexico; 6 hours from Tucson, Arizona; and 8 hours from Phoenix, Arizona.

B. Manageability

Several characteristics of the Aden Lava Flow WSA contribute favorably to its capability of being managed as wilderness in the long-term. The ruggedness of the lava flow inherently discourages rangeland developments, ORV use, and other human intrusions. The WSA's large size and blocked-up configuration enhance the likelihood of the area remaining natural and opportunities for solitude being preserved.

Management of the area as wilderness is minimally complicated by state land. State land within the lava flow limits the degree of BLM control over the WSA (see Map 1 for land status). Nonwilderness or incompatible uses on state land would negatively impact wilderness values if development of access required road construction across the lava flow.

There is an existing oil and gas lease in the eastern part of the Aden Lava Flow WSA. The lease was let before the Federal Land Policy and Management Act (FLPMA), which mandated the wilderness review, became law on October 21, 1976, and is referred to as a pre-FLPMA lease. Therefore, the leaseholder has valid existing rights which would allow full exploration and development of the lease even if the activities impaired wilderness values and whether or not the area is designated wilderness.

Continuation of vehicle use on the road into Aden Crater presents a minor manageability concern. As visitor use increases, opportunities for solitude in the Crater would

diminish. In addition, the Aden Crater is within the RNA. (See Map 1 for the general location of the RNA.) The RNA management plan requires that ORV use be restricted within the RNA.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Aden Lava Flow WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). This area was among the ten most commented upon proposed WSAs in the state. Maps and detailed narratives were among the data submitted.

Approximately 42 percent of the personal letters favored wilderness review of the Aden Lava Flow. Supporting reasons included the area's large size, apparent naturalness, outstanding opportunities for solitude and primitive recreation, and ecological and geological supplemental values.

Approximately 58 percent of the personal letters opposed wilderness review of the area. Opposing comments cited the presence of roads and imprints of man's activities and described opportunities for solitude as less than outstanding due to the outside sights and sounds of the Southern Pacific Railroad, Interstate 10, and the low level crossings of military aircraft. Aggregate minerals, oil and gas potential, geothermal energy potential, and grazing were identified as resource conflicts. One comment suggested that instead of a WSA designation, the Research Natural Area (RNA) could be expanded or the area could be designated an Area of Critical Environmental Concern (ACEC).

VI. ALTERNATIVES AND IMPACTS

None of the alternatives would have significant impacts on cultural, air, and education/research in the Aden Lava Flow WSA. For this reason, these resources were not included in the following discussions.

A. All Wilderness

Under this alternative, the entire 23,857 acres of public land within the Aden Lava Flow WSA would be recommended suitable for wilderness designation.

If designated as wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981) as follows.

Generally, motorized access on vehicle trails within the WSA would not be allowed. However, permits for motorized access on vehicle trails to maintain rangeland developments in the WSA could be authorized under the WMP.

The WSA would be managed as a VRM Class I.

Development of the existing pre-FLPMA oil and gas lease in the eastern part of the WSA is not assumed under this alternative because the oil and gas potential in the WSA is considered poor. Since the geothermal resources of the Aden Lava Flow do not appear economically exploitable, geothermal development in the WSA is not assumed under this alternative. The sale of slab lava rock would not be allowed under the WMP.

Under this alternative, it is assumed that some of the proposed pipelines and troughs for the Cosimati allotment (3056) would not be implemented because of the cumulative impacts on the naturalness of the WSA.

1. Impacts to Minerals

There has been no energy minerals production in the Aden Lava Flow WSA. Because oil and gas potential appears to be poor and geothermal resources are not considered economically exploitable, the impacts to the energy minerals industry would be minor in the short-term. The economic benefits forgone to the energy minerals industry would also be minor in the short-term.

Exploration and leasing for energy minerals would not be allowed under the mineral leasing laws after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential in the WSA or for development and production. Therefore, the energy minerals industry could be impacted in the long-term.

The effect on development of decorative stone (slab lava rock) would be negligible due to its availability outside the WSA.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation, including Cereus greggii, a Bureau sensitive plant species proposed for Federal listing.

Three of the proposed pipelines on the Cosimati allotment (3056) would be buried which would result in short-term impacts due to soil disturbance and removal of vegetation. The fourth proposed pipeline would be laid across the surface of the lava flow and would have little impact on soils and vegetation. Increased livestock use around each new trough installed would affect vegetation production and compact soils on an area of approximately 40 acres. Native vegetation probably would not reestablish itself in these areas. However, these additional sources of water could result in redistribution of existing livestock use for better overall utilization of the vegetative resource on this allotment. Not all of the four proposed pipelines and troughs would be constructed under the All Wilderness Alternative.

Limited vehicular access on the existing trails on both allotments in the WSA would allow vegetation to increase, but would be insignificant due to occasional access for maintenance of rangeland developments by permitted users (see Chapter III, Livestock Grazing).

b. Wildlife

Surface disturbance and development would be limited and slab lava rock sales would not be allowed. This would protect wildlife habitat from degradation.

c. Visual

Existing visual resources would be protected. The area would be managed as a VRM Class I, which allows modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity.

d. Livestock Grazing

Not all of the proposed pipelines and troughs would be constructed on the Cosimati allotment (3056). No access roads would be constructed. None of the existing developments have vehicular access at the present time (see Chapter III, Livestock Grazing). If motorized access was required, a permit could be authorized.

Use of motor vehicles on existing vehicle trails to check cattle would not be allowed. This could cause slight impacts to the livestock operators when monitoring livestock activity and could increase costs depending on the use normally made of the vehicle trails.

e. Recreation

Present motorized recreation use patterns would be impacted. ORV enthusiasts and hunters would not be permitted motorized access on vehicle trails along the eastern perimeter of the lava flow or on the vehicle trail through the southeast part of the WSA.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. The majority of the WSA could be managed to maintain its natural appearance, opportunities for solitude and primitive recreation, and special features in the long-term. Management of the area as wilderness is slightly complicated by state land and a pre-FLPMA oil and gas lease. Nonwilderness uses on the state land or oil and gas exploration and development on the existing pre-FLPMA lease could degrade natural values, opportunities for solitude and primitive recreation, and special features. The impacts could be minimal to major depending on the location, type, and extent of development and access requirements. However, developments of this nature seem unlikely at the present time. Vehicular use on the cherry-stemmed road into Aden Crater would periodically disrupt solitude in the area in and around the Crater.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the Aden Lava Flow WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing and potential uses (see Chapter III) would continue without regard to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) as follows.

Approximately 20,681 acres, comprising most of the WSA, would be managed as a VRM Class III. Approximately 3,176 acres in the south-central part of the WSA would be managed as a VRM Class IV.

Development of the existing pre-FLPMA oil and gas lease in the eastern part of the WSA is not assumed under this alternative because the oil and gas potential in the WSA is considered poor. Since present indications are that the potential for economically exploitable geothermal occurrences in the Aden Lava Flow is low to moderate, geothermal development in the WSA is not assumed under this alternative. The sale of slab lava rock would be allowed.

All of the proposed rangeland developments (pipelines and troughs) on the Cosimati allotment (3056) could be implemented.

1. Impacts to Wilderness Values

The wilderness values and special features of the Aden Lava Flow WSA would not be protected through Congressional designation. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

The extraction of slab lava rock would degrade natural values and opportunities for solitude. The impacts of extracting slab lava rock could be minimal to major depending on the extent of the activities and access requirements.

The installation of all four proposed pipelines and troughs would cumulatively degrade the natural values of the WSA.

Continued ORV access on vehicle trails along the northeast edge of the lava flow and on the vehicle trail through the southeast part of the WSA would periodically disrupt the solitude in these areas.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Removal of slab lava rock would have a minimal impact on soils and vegetation as there is little, if any, soil or vegetation where the lava rock is located. A minor increase in sediment load could result from

extraction of lava rock. However, the impact would be of minor significance because of the shallow, indefinite drainage patterns in the lava flow.

Three proposed pipelines and troughs and possibly access roads could be constructed. Vegetation and topsoil would be removed if the roads are constructed. The fourth pipeline and trough in the lava flow would have little impact on vegetation and soil because it would be laid on top of the lava surface and construction of an access road would not be possible.

The habitat for a Bureau sensitive plant species proposed for Federal listing, Cereus greggii, could be impacted through these surface disturbing activities.

b. Wildlife

There would be impacts on wildlife if lava rock extraction is authorized. There would be some loss of habitat and animals in the immediate area would be displaced. However, sale and extraction of slab lava rock would not be authorized in the portion of the lava flow within the RNA and wildlife habitat would be protected. (See Map 1 for general location of RNA.)

If range proposals to construct pipelines and troughs in the lava flow are carried out, this would affect wildlife in several ways. More water would be provided for wildlife as well as cattle. There would be some loss of vegetative cover and food for wildlife because cattle would graze in areas now unused.

c. Visual

Most of the WSA would be managed as a VRM Class III which allows moderate changes in the landscape as long as the visual contrast is subordinate to the existing landscape. The south-central part of the WSA, would be managed as a Class IV which permits significant changes in the basic elements of the landscape as a result of management actions. Extraction of lava rock in the WSA could degrade visual resources in the long-term under a VRM Class III and IV.

d. Minerals

There would be minimal impacts on minerals exploration and development. Mining activities would be regulated to prevent unnecessary and undue degradation of the land.

e. Livestock Grazing

All proposed rangeland developments could be constructed. Rangeland developments could be checked and maintained on a convenience basis using motorized equipment. No impacts to livestock grazing would occur under the No Action/No Wilderness Alternative.

f. Recreation

Motorized recreation uses, primarily ORV use and hunting, could benefit from the improved access associated with slab lava rock extraction. However, hunting opportunities could be degraded as a result of the impacts of lava rock extraction on wildlife.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The recommended action for the Aden Lava Flow WSA is the All Wilderness Alternative. A total of 23,857 acres would be recommended suitable for wilderness designation.

Approximately 1,760 acres of state land adjacent to the WSA boundary should have a high priority for acquisition if the area is designated wilderness.

After wilderness designation, the necessity and feasibility of closing and rehabilitating the road into Aden Crater would be determined during the development of a wilderness management plan for the area.

B. Rationale

The portion of the Aden Lava Flow WSA recommended suitable for wilderness designation in the All Wilderness Alternative has high quality wilderness values.

The imprints of man within this large WSA are minimal and the quality of the area's naturalness is exceptional. The rugged interior relief of the lava flow and the large size and blocked-up configuration of the WSA support excellent opportunities for solitude. The Aden Lava Flow WSA contains special ecological and geological features of scientific and educational value. A portion of the area was designated a RNA in 1978.

The acquisition of state land within and adjacent to the WSA would enhance the manageability of the area as wilderness in the long-term. Management of the acquired land as wilderness would eliminate the potential impacts on wilderness values of nonwilderness uses on the state sections and the potential impacts of granting access across the WSA to state land.

C. Consistency With Other Plans

The recommended action for the Aden Lava Flow WSA does not conflict with any of the decisions in the Southern Rio Grande Planning Area MFP (BLM 1982).

The recommended action presents minor conflicts with the provisions of the Aden Lava Flow Research Natural Area Management Plan (BLM 1977). The plan provides for the installation of five interpretive signs within the RNA. These signs would probably not be allowed under the "minimum tool" provisions of the Wilderness Management Policy (see Map 1 for the general location of the RNA).

At this time, there are no known inconsistencies between the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Draft Supplemental Environmental Assessment for Wilderness Study Areas in New Mexico.

APPENDIX E

ALAMO HUECO MOUNTAINS WSA (NM-030-038)

I. GENERAL DESCRIPTION

A. Location

The Alamo Hueco Mountains Wilderness Study Area (WSA) is located in southeastern Hidalgo County in the "bootheel" part of the State of New Mexico. The WSA is approximately 70 miles south-southeast of Lordsburg, New Mexico.

The U.S. Geologic Survey (USGS) topographic map covering the WSA is the Dog Mountains, New Mexico, quadrangle at the 15-minute scale.

B. Climate and Topography

The Alamo Hueco Mountains WSA is characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is 9 to 10 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of arid climates. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration.

During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. The average monthly maximum temperature during July, the warmest month, is in the upper 90's. In January, the coldest month, the average monthly minimum temperature is in the upper 20's. Slightly cooler temperatures can be expected throughout the year at higher elevations.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.

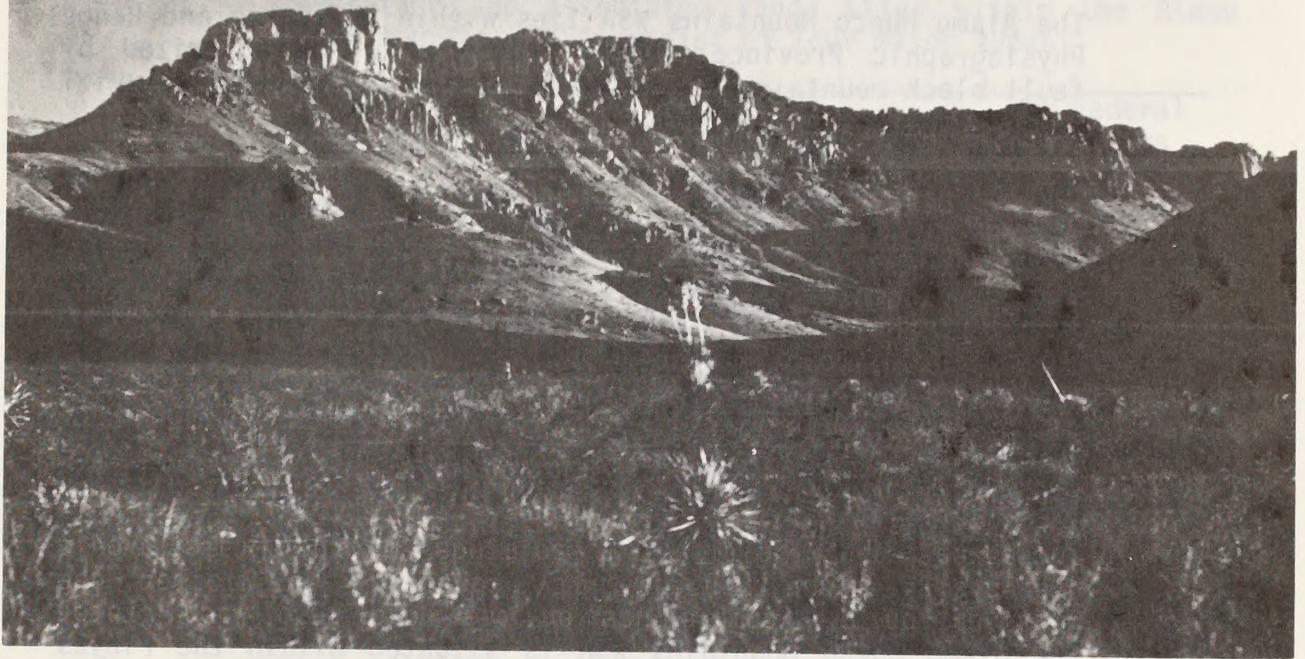
This WSA contains most of the Alamo Hueco Mountains. The Alamo Hueco Mountains are highly eroded volcanic mountains characterized by mesas and vertical cliffs with long, sinuous canyons. Elevations range from about 4,800 feet on the pediment slopes to 6,417 feet at Pierce Peak. The WSA encompasses most of Cottonwood Canyon, and portions of Black Canyon and Horse Canyon.

C. Land Status

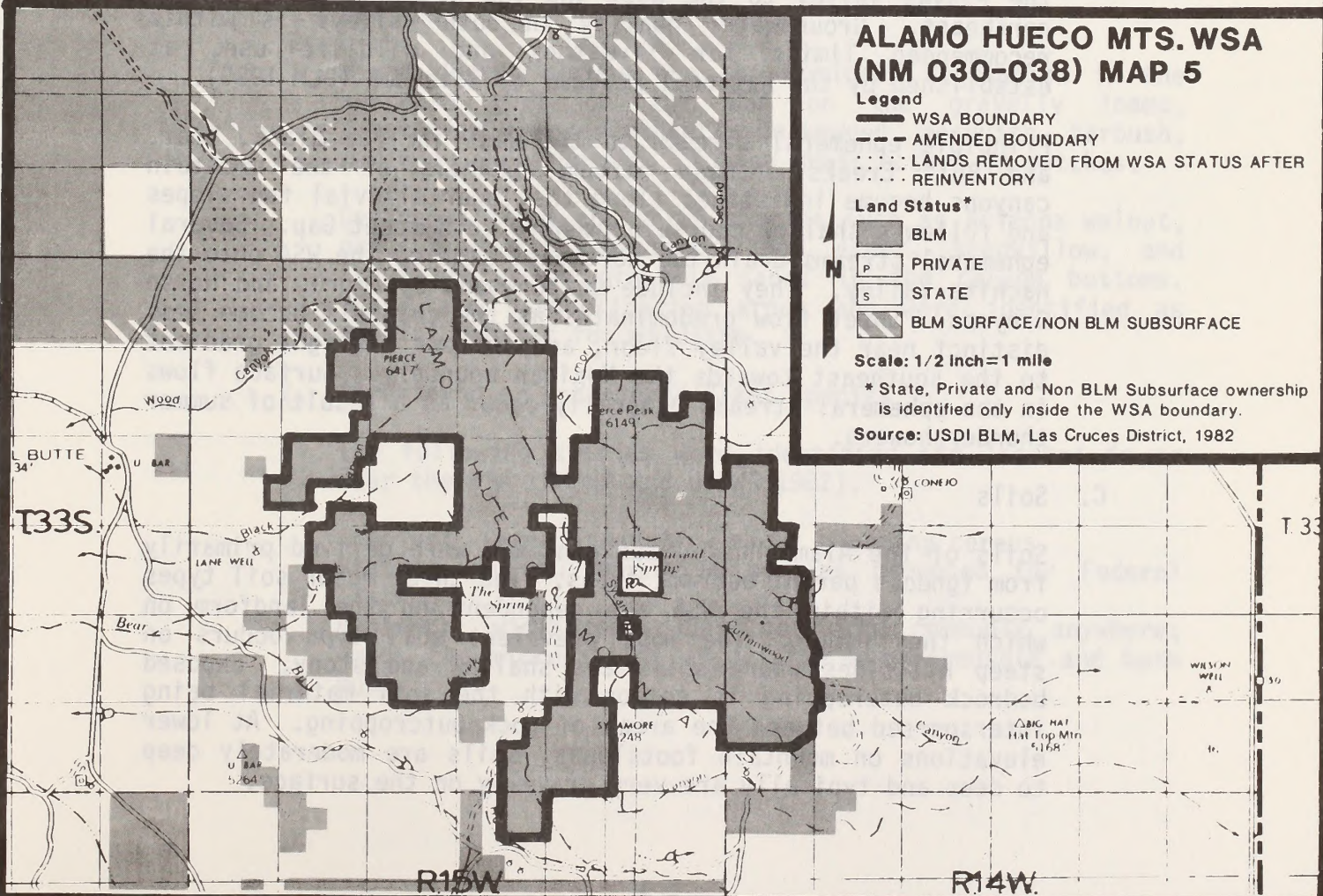
The WSA contains 10,796 acres of public land. There are 200 acres of private land within the WSA boundary. (See Map 5 for land status.)

D. Access

There is no legal access to the Alamo Hueco Mountains WSA. The WSA is physically accessible on the west by a ranch road branching off State Highway 81, approximately 33 miles south-southwest of Hachita. Permission must be obtained from the private landowner, the Pacific Western Land and Cattle Company -- U-Bar Division, to cross the private land surrounding the WSA.



Overview of the Alamo Hueco Mountains WSA.



II. EXISTING RESOURCES

A. Geology

The Alamo Hueco Mountains WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments.

The Alamo Hueco Mountains are a fault block consisting of layered volcanics of varying composition. These volcanics, most of which have their origin in volcanic centers to the west (Erb 1979; Reiter 1980), range in age from possible late Cretaceous to mid-Tertiary. There is little direct geologic evidence for events prior to the late Cretaceous time period in the Alamo Hueco Mountains. The regional model suggests shallow marine sedimentation during the late Paleozoic time. Basin and Range tensional forces uplifted the Alamo Hueco fault block and produced the faulting and jointing patterns evident today.

B. Water

The Alamo Hueco Mountains WSA is situated within the Playas Basin, a noncontributing, closed basin. Drainage is towards the Playas Valley to the west and the Hachita Valley to the northeast. Groundwater quality in both valleys is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

Principle ephemeral streams to the west include Black, Bear, and Bull Creeks. These stream channels of the mountain canyons become indistinct along the lower alluvial fan slopes and follow a shallow course northward to Hatchet Gap. Several ephemeral streams drain the northeast side of the WSA onto the Hachita Valley. They include Cottonwood, Sycamore, and Horse Canyons. Sheet flow predominates as the channels become less distinct near the valley floor, and follows a slight gradient to the southeast towards the Mexican boundary. Surface flows in the ephemeral streams generally occur as a result of summer thundershowers.

C. Soils

Soils of the Alamo Hueco Mountains WSA were derived primarily from igneous parent bedrock types. The three major soil types occurring within the WSA are dependent on the landform on which they occur. The most prevalent soil type occurs on steep hillsides where soils are shallow and stony. Exposed bedrock outcropping is common with the soil material being interspersed between the areas of rock outcropping. At lower elevations on mountain footslopes, soils are moderately deep to deep and typically are very gravelly on the surface.

D. Vegetation

1. General

Vegetation and associated range sites within the Alamo Hueco Mountains WSA consist of four major types:

Vegetation Type	Range Site	Federal Acres
Juniper-oak brush	Mountains	10,675
Creosote	Gravelly	25
Mixed desert shrub	Gravelly loam	20
Deciduous trees	Gravelly sand	76

Juniper trees, oak brush, ocotillo, and sumac occur in the higher mountain elevations and in protected canyons. Grass species (muhlys, gramas, threeawns, and tobosa) with other shrubs such as yucca, snakeweed, and mesquite occur on the mountain slopes down to the lower elevations.

Creosote is the dominant vegetation on gravelly sites located on the northern edge of the WSA in the flat areas. Other associated shrub species are tarbush, mesquite, mariola, acacia, and snakeweed. Tobosa grass occurs in patches.

Mixed desert shrubs are the dominant vegetation in the southern part of the WSA on the gravelly loams. Vegetation is predominantly snakeweed, mesquite, tarbush, mariola, and creosote. Tobosa grass occurs in patches.

Deciduous trees and shrub species such as Arizona walnut, oak, hackberry, mesquite, box elder, seepwillow, and acacia occur on gravelly sands in the canyon bottoms. These are pseudoriparian areas and were identified as special habitat for wildlife.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Penstemon lanceolatus - scarlet tube beardtongue

Status: Selected by the New Mexico State Heritage Program as a special concern element.

Habitat: Uncommon, scattered on southwest facing slopes and in rocky canyons under mountain mahogany, juniper, and oak. Also occurs in open areas.

E. Wildlife

1. General

A number of factors combine in the Alamo Hueco Mountains to make it an extremely valuable area for wildlife. There are several habitat sites in the WSA; grass mountain and mixed shrub mountain are the largest. Canyons which have patches of riparian vegetation such as sycamore trees intersect the mountain range. Springs and windmills are found in these areas, but most of the canyons are on private land and outside the WSA boundary. However, they still strongly influence the wildlife within the WSA because of the close availability of water, cover, and food.

There are many cliffs and caves in the range. The area is isolated and very close to the Mexican border. These features also contribute to the unusual wildlife community. Golden eagles and red-tailed hawks are known to nest in the cliffs and prairie falcons probably do also (BLM 1981).

A good-sized population of javelina is found in the Alamo Hueco Mountains. In New Mexico, this species is only found in the southwestern part of the state.

Judging by reported mountain lion sightings in the area, this species also has a viable population in and around the WSA. Mountain lions have large home ranges, so there would not be many resident animals within the WSA; however, juveniles without territories might frequently travel through the area.

Other game species in the WSA are mule deer (more common at the edges of the area) and Montezuma quail. The latter are seen only infrequently.

A variety of nongame mammals, birds, reptiles, and amphibians have been recorded in the WSA. (A complete list of species is available for review at the Las Cruces District Office.)

2. Threatened or Endangered Animal Species

Several threatened or endangered animal species have been verified in the Alamo Hueco Mountains and several more may be found there.

Historically, desert bighorn sheep, a state-listed endangered species, were reported in the area. There are also several recent sightings, but evidence that they use the area is inconclusive (BLM 1980).

Other state endangered species reported in or near the WSA are the coatimundi, the thick-billed kingbird, the varied bunting, and possibly the giant spotted whiptail. All of these were reported from waters or riparian areas in the canyons, which are outside of the WSA boundary. However, these areas are so intermingled with Federal land that the endangered animals might be found within the WSA (BLM 1981; Hayward et al. N.D.; Hubbard et al. 1979).

A Federally-listed species, the gray wolf, was historically found in the WSA. There have been unverified sightings of wolves over the last 10 years in the New Mexico bootheel, but there is no reason to think they are in the Alamo Hueco Mountains on a regular basis (Carley 1982; Hayward et al. N.D.).

F. Visual

The Alamo Hueco Mountains have a Class A (high) scenic quality rating. The landform of the mountains consists of rough, craggy mesas with crumbling outcrops. The line in the landform consists of inclined or horizontal bands. Landform colors are a variety of deep shades of reddish-brown. Vegetation occurs in alternating bands of greenish-gray.

The Alamo Hueco Mountains are in a Visual Resource Management (VRM) Class II.

G. Cultural

There are seven known prehistoric sites inside the WSA boundary. These sites consist of a number of very significant cave sites with stratified deposits and a series of camp sites in the flatter valley bottoms. The caves in these mountains have been identified as an area eligible for the National Register of Historic Places as an archaeological district. Some of the caves are significant on the national level because they contain stratified deposits that have materials in them that usually are not found in exposed sites (e.g., basketry, cloth, vegetable remains, and other perishables). In addition, cave sites are very rare in this portion of the southwest. These caves can provide significant information concerning little known artifact types and prehistoric environmental data.

Historically, the mountains were first visited by the Spanish in a military campaign led by Hugh O'Connor in 1774. Later, there was considerable homesteading in the mountains and they were used during Pershing's incursion into Mexico.

Of all the WSAs in the Las Cruces/Lordsburg Resource Area, the Alamo Hueco Mountains WSA probably has the most significant known prehistoric resources. The historic resources are the third or fourth most significant of the WSAs.

H. Air

Generally, the quality of air within the Alamo Hueco Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality. The Playas Valley Smelter, located approximately 5 miles northwest of the WSA boundary, could slightly lower the air quality of the area. This could only occur if weather conditions are such that lower quality air is trapped by an inversion layer which eventually drifts over the WSA. This phenomenon probably would not change the Class II rating of air quality in the WSA.

The only other major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds (commonly gusting in excess of 30 mph) result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the Alamo Hueco Mountains WSA. However, numerous oil and gas lease applications have been filed on parcels located within the boundaries of the WSA.

Although the mountains themselves do not appear to be favorable for oil and gas accumulations due to their volcanic appearance, much of the pediment and bolson area immediately adjacent to the Alamo Hueco Mountains has good petroleum potential. According to the Minerals Management Service, a number of sections in T. 33-34 S., R. 14 W., just east of the WSA are most favorable. The presence of potentially good source and reservoir rocks at depth combined with favorable geologic structures, such as the Pedregosa Basin to the southeast and the Overthrust Belt which runs through the "bootheel", makes these and other nearby areas prime exploration targets. The Humble No. 1 State "BA" well was drilled northwest of the WSA to 14,585 feet and had shows of both oil and gas. Several energy companies (including ARCO, Texaco, Exxon, May, Placid, and Getty) have expressed interest in the Alamo Hueco Mountains area. Geophysical exploration is occurring in the vicinity. ARCO has programmed a test well in the vicinity of U-Bar Ridge. Presently, exploration interest has accelerated in the area due to geologic similarities with the Overthrust Belt. However, some programs have been dropped because of the high cost of exploration on the adjoining private land. Trespass and damage fees to explore across private land have been too expensive for the exploration companies.

The current situation in the Alamo Hueco Mountains for oil and gas leasing is that the entire WSA has a protective stipulation attached to all leases. The protective stipulation states that special values exist in the area such as threatened or endangered species and their habitat. In April/May of 1982, the area was opened for leasing with the protective stipulation attached. Exploration is hampered by the presence of sensitive, threatened, or endangered species (see Chapter II, Vegetation and Wildlife). Planning documents recommend that the protective stipulation continue to be attached to oil and gas leases (BLM 1983).

Travertine deposits in the Alamo Hueco Mountains indicate a potential for geothermal energy; however, the potential appears to be low.

2. Non-Energy Minerals

Suitable aggregate materials for fill or general road construction and maintenance are situated in some major drainages. However, extraction of the mineral materials is not probable due to the remoteness of the area and other potential areas lying closer to the market.

Manganese mineralization occurs with travertine deposits in the Bluff Creek Formation in the southern portion of the Alamo Hueco/Dog Mountains area. Psilomelane bands up to 1 inch thick are present in 2-3 foot beds of travertine in T. 34 S., R. 15 W., Section 11: SE $\frac{1}{4}$. The manganese does not appear to be of commercial value. Manganese is on the National Defense Stockpile Inventory of Strategic and Critical Minerals.

The possibility of an economic location of a mineral occurrence appears to be unlikely.

B. Watershed

Water use within the Alamo Hueco Mountains WSA is primarily by livestock and wildlife. There is one dirt tank inside the WSA that utilizes surface runoff to provide water for livestock and wildlife. Several springs are found in canyons of the Alamo Hueco Mountains that support riparian vegetation important for wildlife, however, they are located on private land. Additionally, several well facilities and dirt tanks are located just outside the WSA boundary that are for livestock watering and limited domestic use.

C. Livestock Grazing

1. Allotments

Two parts of one grazing allotment (the U-Bar Ranch) are within the Alamo Hueco Mountains WSA. This allotment is part of the Pacific Western/Phelps-Dodge Corporation. Some areas in the WSA are ungrazed due to the steep slopes and distance from livestock water developments. Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
U-Bar 1510	19,896	4,548	10,405	52%
U-Bar 2022	39,006	7,608	391	1%
TOTAL			10,796	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
U-Bar 1510	dirt tank	T. 33 S., R. 15 W., Sec. 28
U-Bar 2022	interior fence	2½ miles

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Education/Research

If desert bighorn sheep are reintroduced into the area, it is possible that a New Mexico State University graduate student would do a research monitoring project on them. There is a possibility of paleoenvironmental studies in some of the dry caves and rock shelters by Dr. Thomas VanDevender of the University of Arizona.

E. Wildlife

There are no wildlife developments in the WSA at this time, but the Big Hatchet-Alamo Hueco Habitat Management Plan (BLM 1982) contains a proposal to construct water developments for desert bighorn sheep. It may be necessary to allow access by helicopter for construction of these waters. New Mexico Department of Game and Fish plans to reintroduce desert bighorn sheep into the Alamo Hueco Mountains (Sandoval 1982).

Six windmills and three springs are located on private land, less than ½ mile from the WSA. As mentioned in Chapter II, Wildlife, these are used by wildlife in the WSA.

Planning documents recommend continuation of the protective stipulation for oil and gas leases in the area to protect desert bighorn sheep and nesting raptors (BLM 1983).

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The Alamo Hueco Mountains WSA generally appears natural. Imprints of man on public land within the WSA consist of a dirt tank and two-track vehicle trails in drainages. These imprints are substantially unnoticeable due to the topographic screening provided by the rugged terrain. Rangeland developments outside the WSA boundary on private land in Horse Canyon, Emory Canyon, and on Bull Creek are also substantially unnoticeable because of topographic screening. The outstanding scenic values of the Alamo Hueco Mountains further enhances the area's natural character.

b. Solitude

Outstanding opportunities for solitude exist throughout the Alamo Hueco Mountains. These opportunities are primarily a result of the rugged topography. The Alamo Hueco Mountains are dissected by numerous steep canyons which provide excellent opportunities to escape the sights and sounds of others. Although not all of the major canyons are Federally-owned, outstanding opportunities for solitude on public land within the WSA are available.

c. Primitive and Unconfined Recreation

The Alamo Hueco Mountains offer outstanding opportunities for primitive and unconfined recreation. The scenery, geology, vegetation, wildlife, and cultural values of these mountains result in an exceptional primitive recreational resource. Specific opportunities include hiking, nontechnical rock climbing, backpacking, hunting, photography, and sightseeing.

These opportunities are limited only by the land ownership patterns surrounding the WSA. Because of the convoluted public land configuration, it is difficult for visitors to fully utilize the recreation resources of the Alamo Hueco Mountains or to be assured of access to the area.



Cougar hunter in the Alamo Hueco Mountains.

2. Special Features

The Alamo Hueco Mountains WSA contains special ecological, cultural, and scenic features.

The ecological features include both vegetation and wildlife values of scientific and educational interest. The Alamo Hueco Mountains provide habitat for one Bureau sensitive plant species proposed for Federal listing and one plant species selected by the New Mexico State Heritage Program as a special concern element (see Chapter II, Vegetation). The Alamo Hueco Mountains are an extremely valuable area for wildlife and support a variety of game and nongame species. The number of habitat sites in the WSA, the special habitat features such as cliffs and caves, and the isolation of the area and its proximity to the Mexican border all contribute to its value for wildlife. Five state endangered animal species have been reported in or near the area. (See Chapter II, Wildlife).

The cultural features of the Alamo Hueco Mountains WSA are also of scientific and educational value. This WSA contains the most significant known prehistoric resources of all the WSAs in the Las Cruces/Lordsburg Resource Area. Caves within the WSA have been identified as eligible for

the National Register of Historic Places as an archaeological district (see Chapter II, Cultural).

The Alamo Hueco Mountains also have outstanding scenic features with a Class A (high) scenic quality rating (see Chapter II, Visual).

Future projects of scientific and educational value planned in this WSA include reintroduction of desert bighorn sheep and paleoenvironmental studies in dry caves and rock shelters (see Chapter III, Wildlife and Education/Research).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Alamo Hueco Mountains WSA as being in the Mexican Highlands Shrubsteppe Province with a potential natural vegetation of oak-juniper woodland.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Type</u>	<u>Acres</u>
oak juniper woodland scrub	10,675
creosote	25
Trans-Pecos shrub savanna	20
northern flood plain forest	76

b. Distance from Population Centers

The Alamo Hueco Mountains WSA is approximately 4 hours driving time from El Paso, Texas; 3 hours from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Two factors which affect the manageability of the Alamo Hueco Mountains WSA are land status patterns and lack of legal access.

The land status in the Alamo Hueco Mountains is a mosaic of private and public lands. As a result, the WSA boundary is very convoluted, consisting of many "fingers" of public land surrounded by private land. Nonwilderness or nonconforming uses on the private land, such as proliferation of grazing developments, could negatively affect the naturalness of the WSA, opportunities for solitude, and the supplemental values of the area. Opportunities for primitive recreation are negatively impacted by the convoluted boundary in that it is almost inevitable that a visitor hiking through the area must hike on private land. Visitors attempting to stay within the WSA boundary are unable to fully utilize the recreation resource.

At the present time, there is no legal access to the WSA. Permission must be obtained from the private landowner for access across private land to the WSA. Therefore, the accessibility or availability of the area for wilderness purposes, such as primitive recreation, is not guaranteed. Easements or rights-of-way would have to be obtained to guarantee visitors access to the area.

Primarily because of the convoluted land status patterns in and around the Alamo Hueco Mountains WSA, the BLM cannot reasonably manage the area to preserve its wilderness characteristics over the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Alamo Hueco Mountains WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). Maps, photographs, road affidavits, and data on the Pedregosa Basin were included with the comments.

Approximately 60 percent of the personal letters favored wilderness review of the area. Supporting comments cited the size, naturalness, and outstanding opportunities for solitude and primitive recreation as justification. The area's outstanding scenery, cultural values, and abundance of wildlife species were listed as supplemental values.

Approximately 40 percent of the personal letters opposed wilderness review. Existing rangeland developments and access routes were cited as impacts on naturalness. The irregular shape of the WSA and land status patterns were identified as manageability problems. Another comment suggested that wilderness designation would attract many visitors resulting in overuse and deterioration of the wilderness resource. Oil and gas potential and mining were listed as resource conflicts.

VI. ALTERNATIVES AND IMPACTS

None of the alternatives would have significant impacts on air and education/research in the Alamo Hueco Mountains WSA. For this reason, these resources were not included in the following discussions.

A. All Wilderness

Under this alternative, the entire 10,796 acres of public land within the Alamo Hueco Mountains WSA would be recommended suitable for wilderness designation. (See Map 5 for WSA boundary.)

If the WSA is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981) as follows.

Generally, motorized access on vehicle trails within the WSA would not be allowed. However, permits for vehicular access to maintain existing rangeland developments in the WSA could be authorized under the WMP.

Desert bighorn sheep would be reintroduced into the WSA. Projects proposed for the sheep in the Big Hatchets-Alamo Huecos Habitat Management Plan (HMP) could be implemented on a case-by-case basis if approved by the State Director.

The WSA would be managed as a VRM Class I.

1. Impacts to Minerals

There has been no production of energy minerals within the WSA. However, much of the pediment and bolson area surrounding the Alamo Hueco Mountains has good oil and gas potential. The area was opened for leasing in April/May 1982. Any leases let in the WSA would be covered by a protective stipulation for bighorn sheep and nesting raptor habitat and the wilderness protection stipulation. Because of the protective stipulation, exploration could be denied and oil and gas could only be reached by directional drilling to the areas to be protected. Leaseholders could be impacted in the short-term (the life of the lease) since any activities that would impair wilderness values would not be allowed under the mineral leasing laws.

It is assumed that after wilderness designation, existing leases, if unexplored, would not be reissued and there would be no new leasing. If a discovery were made in an area adjacent to the WSA, energy minerals would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the oil and gas potential in the WSA. The economic benefits lost would be

expenditures and jobs in the local economy as well as royalties paid from production. If no new leases are let after wilderness designation, approximately 10,796 acres of Federal minerals that have been identified as having good potential for oil and gas would not be leased. Assuming the leases are noncompetitive and are leased at an annual rental fee of \$1.00 per acre, \$10,796 of annual leases, of which the State of New Mexico receives 50 percent, would be lost. Since the WSA boundary excludes most of the best potential oil and gas area surrounding the Alamo Hueco Mountains, impacts to the oil and gas industry would be moderate in the long-term.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation in the WSA as well as protecting habitat for a Bureau sensitive plant species proposed for Federal listing and a special concern plant species selected by the New Mexico State Heritage Program (see Chapter II, Vegetation).

b. Wildlife

Wilderness designation would maintain the remote nature of wildlife habitat by limiting development and vehicular access in the area. This would benefit desert bighorn sheep which prefer isolation. Javelina habitat would also be protected.

Projects proposed for desert bighorn sheep in the Big Hatchets-Alamo Huecos HMP should not be significantly affected because the WMP allows habitat manipulation for the benefit of an endangered species. However, approval from the State Director would be needed on a case-by-case basis.

Other endangered animal species which have been found in the Alamo Hueco Mountains are mainly dependent on riparian vegetation. Although most of this habitat is outside the WSA, the small portion that is in would be protected by wilderness designation.

c. Visual

Existing visual resources would be protected. Minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted.

d. Cultural

Access within the area would be limited to foot and horseback travel. Existing limitations on access across surrounding private land currently prevents some individuals from entering the area. Site vandalism by individuals gaining access to the area with motorized vehicles would decrease.

e. Livestock Grazing

A permit for vehicular access for maintenance purposes to the existing dirt tank on the U-Bar allotment (1510) could be authorized under the WMP. Use of motor vehicles on existing vehicle trails to check livestock would not be permitted. Checking livestock on foot or horseback could result in less effective livestock management due to the inconvenience and time requirements and may affect costs depending on the use normally made of vehicle trails.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. However, due to the surrounding private land, the Alamo Hueco Mountains WSA could not be managed to preserve the existing wilderness resources in the long-term. The outside sights and sounds of nonwilderness uses on the adjacent private land could degrade natural values, opportunities for solitude, and the special features of the WSA. The impacts of uses on adjacent lands could be minimal to major depending on the location, type, and extent of development and access requirements.

Land status patterns would also affect the capability of the BLM to provide outstanding opportunities for primitive recreation. Because of the convoluted public land configuration, visitors would be unable to fully utilize the recreation resources of the Alamo Hueco Mountains.

Access to the area is controlled by surrounding landowners. Wilderness users could be denied access to the area.

B. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the Alamo Hueco Mountains WSA would be recommended unsuitable for wilderness designation.

If the WSA is not designated wilderness, existing and potential uses (see Chapter III) would continue without regard to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) as follows.

Desert bighorn sheep would be reintroduced into the WSA. All proposed projects in the Big Hatchets-Alamo Huecos HMP could be implemented.

The WSA would be managed as a VRM Class II.

Oil and gas exploration and development could occur in the pediment and bolson area immediately adjacent to the mountains within the constraints of a protective oil and gas leasing stipulation for endangered species (including desert bighorn sheep) and for nesting raptors.

1. Impacts to Wilderness Values

The wilderness values and special features of the Alamo Hueco Mountains WSA would not be provided with long-term Congressional protection. Management of the area as specified in land use plans would be subject to administrative change in the long-term.

Oil and gas exploration and development in the Alamo Hueco Mountains could result in the irrevocable degradation of wilderness values. The impacts could be minimal to major depending on the type, location, and extent of the activities and access requirements. The protective oil and gas leasing stipulation covering most of the mountain range would protect the bighorn sheep, if reintroduced into the area in the future, and would also indirectly provide some protection to existing wilderness values.

The transplant of desert bighorn sheep into the area and management under the HMP would enhance the special wildlife features of the WSA.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There would be a loss of vegetation and soils resulting from oil and gas exploration and development over the long-term. Both the Bureau sensitive plant species and the special concern element (selected by the New Mexico State Heritage Program) inhabit rocky canyons or gravelly areas in the WSA where much of the oil and gas activity could take place (see Chapter II, Vegetation). Their habitat could be significantly impacted through surface disturbing activities.

A small increase in sediment load could result from development of oil and gas leases, and new geophysical exploration. Increased sediment would be of minor significance because the drainage basins are topographically closed.

b. Wildlife

Wildlife would be impacted if there is oil and gas development. The protective stipulation would protect endangered species and nesting raptors, but javelina, mountain lions, and nongame species would receive no special protection. There would be some habitat loss and some animals would be disturbed by human presence. In addition, if there were more people in the area, poaching might occur. Actions proposed in the Big Hatchets-Alamo Huecos HMP could be carried out without WMP constraints.

c. Visual

Under a VRM Class II, changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. In the long-term, oil and gas exploration and development could degrade the Class A scenic quality of the area.

d. Cultural

Access within the WSA would not be restricted by the BLM, allowing increased visitation to the area by vehicle. This would make site vandalism easier even though access across surrounding private land is limited. There is a possibility of damage from future oil and gas activity and increased surface disturbing activity.

e. Minerals

Leasing would continue. Exploration, development, and production activities would comply with the constraints of the protective stipulation for desert bighorn sheep and nesting raptors. Seasonal restrictions, limitations on types of exploration, and restrictions on types and locations of access could result in additional operating costs for the oil and gas industry.

f. Livestock Grazing

All rangeland developments would be checked and maintained on a convenience basis using motorized equipment. There would be no impacts to livestock grazing.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The recommended action for the Alamo Hueco Mountains WSA is the No Action/No Wilderness Alternative. The entire 10,796-acre WSA would be recommended nonsuitable for wilderness designation.

B. Rationale

The Alamo Hueco Mountains WSA could not reasonably be managed as wilderness in the long-term. The land status in the Alamo Hueco Mountains is a mosaic of private and public lands and as a result, the WSA boundary is very convoluted. The pediments of the mountains and surrounding flats have high oil and gas potential. These factors represent significant potential wilderness management conflicts.

Because of the irregular boundary, wilderness visitors are unable to fully utilize the primitive recreation resource. Oil and gas exploration and development on the surrounding private land is a good possibility. Oil and gas activities could degrade wilderness values. In addition, there is no legal access to the WSA since it is surrounded by private land.

C. Consistency With Other Plans

The recommended action for the Alamo Hueco Mountains WSA does not conflict with any of the decisions in the Hermanas MFP (BLM 1971). At this time, there are no known inconsistencies between the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Draft Supplemental Environmental Assessment for Wilderness Study Areas in New Mexico.

BIG HATCHET MOUNTAINS WSA
(NM-030-035)

I. GENERAL DESCRIPTION

A. Location

The Big Hatchet Mountains Wilderness Study Area (WSA) is located in southeastern Hidalgo County in the "bootheel" part of the State of New Mexico. The WSA is approximately 50 miles south-southeast of Lordsburg, New Mexico.

The U.S. Geologic Survey (USGS) topographic map covering the WSA is the Big Hatchet Peak, New Mexico, quadrangle. This map is at the 15-minute scale.

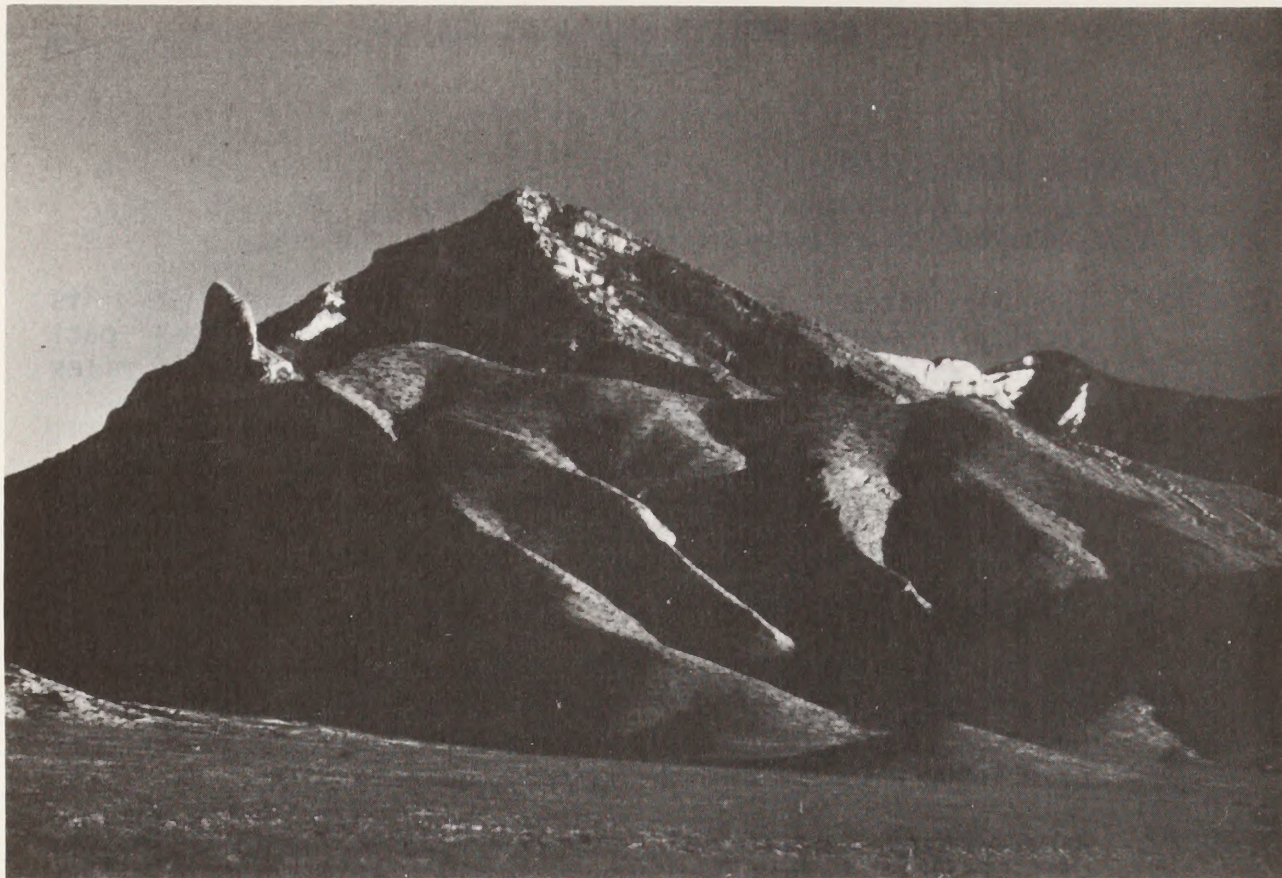
B. Climate and Topography

The Big Hatchet Mountains WSA is characterized by a semiarid continental climate, with mild winters and pleasant to hot summers. Significant differences in climatic conditions are associated with changes in elevation and exposure.

Average annual precipitation in the area is 10 to 12 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of southern desert climates. Approximately half the annual precipitation occurs in July, August, and September as rain accompanying thunderstorms. The storms are generally brief but may be intense and result in flash floods in the arroyos. Snowfall generally averages about 5 inches a year.

During the summer months, daytime temperatures quite often exceed 100°F at elevations below 5,000 feet. Average monthly maximum temperature during July, the warmest month, is in the upper 90's. In January, the coldest month, average monthly minimum temperature is in the middle 20's. Elevation is a significant factor in determining the temperature of any specific locality. Generally, for each 1,000-foot increase in elevation, there is a little more than a 3° decrease in temperature.

Winds generally predominate from the southeast in summer and from the northwest in winter, but local surface wind directions will vary greatly because of local topography. Spring is the windy season. Dry, gusty winds are predominantly from the west-southwest and may exceed 30 mph in the afternoons.



Big Hatchet Mountains WSA.

This WSA consists of the Big Hatchet Mountains, portions of the Hachita Valley on the northeast, and the Playas Valley on the southwest. The Big Hatchet Mountains are a northwest-southeast trending mountain range characterized by very rugged and steep terrain. Elevations vary from about 4,400 feet up to 8,366 feet at Big Hatchet Peak. Major canyons within the Big Hatchet Mountains include Thompson Canyon and Sheridan Canyon.

C. Land Status

The WSA contains 58,014 acres of public land. There are 1,920 acres of state land and 46 acres of private land (patented mining claims) within the WSA boundary. (See Map 6 for land status within the WSA boundary.)

D. Access

There is no legal access to the Big Hatchet Mountains WSA. The best physical access is by way of the ranch road branching east-southeast off of State Highway 81 at Hatchet Gap, approximately 15 miles southwest of Hachita. This road leads into a system of ranch roads forming the north and east boundaries.

MAP 6

BIG HATCHET MTS. WSA (NM 030-035)

Legend

- WSA BOUNDARY
- - - AMENDED BOUNDARY
- LANDS REMOVED FROM WSA STATUS AFTER REINVENTORY

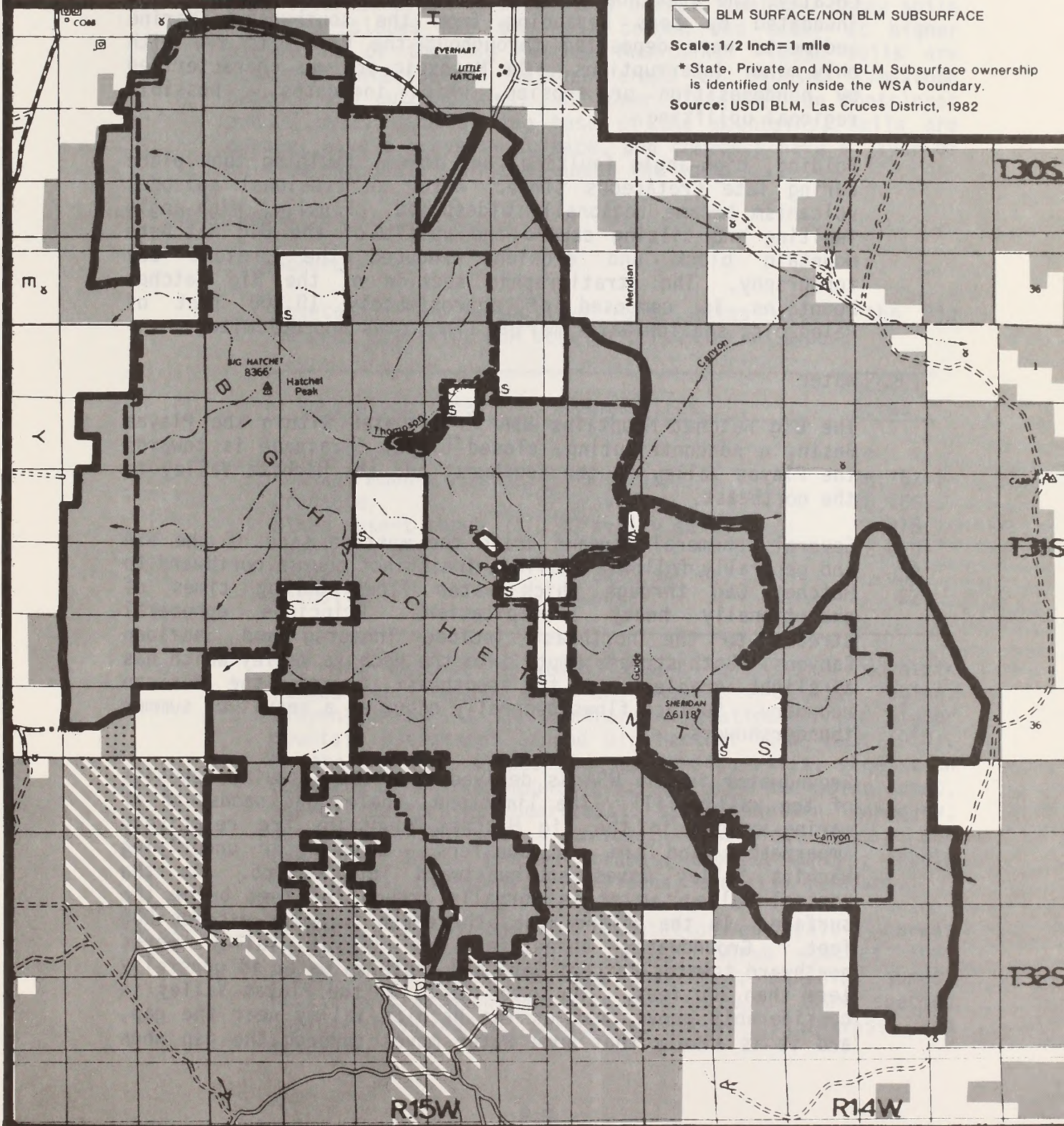
Land Status*

- BLM
- P PRIVATE
- S STATE
- BLM SURFACE/NON BLM SUBSURFACE

Scale: 1/2 Inch=1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The Big Hatchet Mountains WSA lies within the Basin and Range Physiographic Province. This Province is characterized by fault-block mountains separated by basins filled with alluvial and shallow lake deposits.

Locally, the area now known as the Big Hatchet Mountains was inundated by seas advancing from the southwest. Marine sediments were deposited throughout the Paleozoic era with only minor interruptions. The Mesozoic era was characterized by nondeposition or erosion, which indicates a possible regional uplifting.

Folding, high-angle faulting, and thrust faulting took place during late Cretaceous times. After an erosional episode, volcanism became regionally widespread. Finally, high-angle faulting and tilting caused the uplift of the Big Hatchets mountain block and erosion produced the present day topography. The stratigraphic section of the Big Hatchet Mountains is composed of approximately 10,000 feet of Paleozoic, shallow-water marine limestones and dolomites.

B. Water

The Big Hatchet Mountains WSA is situated within the Playas Basin, a noncontributing, closed basin. Drainage is towards the Playas Valley to the southwest and the Hachita Valley to the northeast.

Several ephemeral streams drain the western side of the WSA and generally follow a shallow, indistinct course northward to Hatchet Gap through which water flows during times of exceptionally heavy precipitation. Principle ephemeral streams to the northeast include Thompson and Sheridan Canyons. Both streams empty into the Hachita Valley which has a slight gradient to the southeast towards the Mexican boundary. Surface flows generally occur as a result of summer thundershowers.

Groundwater in the WSA is derived from the alluvial deposits of the valley fill. The limestone, shale, and sandstone of marine origin in the Big Hatchet Mountains are relatively impermeable and are not aquifers. Groundwater underlying Hachita Valley moves southeastward into Mexico. In the central valley, water is normally around 100 feet below the surface. In the upland area, the depth to water exceeds 500 feet. Groundwater underlying the Playas Valley moves northward towards Hatchet Gap, and depth to water is generally less than 200 feet. The water table of the Playas Valley is considerably above that of the Hachita Valley near the gap, and it is likely that some water moves through the gap when

the water table is high. The groundwater reservoir is recharged mainly during flood runoff by infiltration in stream channels. Groundwater quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

Soils of the Big Hatchet Mountains WSA vary depending on the particular landform on which they occur. Shallow, stony soils on steep slopes are the most common and occur at higher elevations of the Big Hatchet Mountains. These soils are commonly interspersed between areas of exposed limestone bedrock and outcroppings. At lower elevations on footslopes and alluvial fans at the base of the mountains, soils are deeper, have a gravelly surface, and commonly have a layer of calcium carbonate (caliche) under the surface.

D. Vegetation

1. General

Vegetation and associated range sites within the Big Hatchet Mountains WSA consist of six major types:

Vegetation Types	Range Sites	Federal Acres
Pinyon-juniper - mixed mountain shrub	Mountains	28,752
Creosote	Gravelly	26,166
Mixed desert shrub	Gravelly sand	316
Tobosa-tarbrush	Clayey	2,420
Tobosa	Draws (swales)	338
Mesquite	Sandy	22

The Big Hatchet Mountains dwarf surrounding mountain ranges and appear as an island in this region. Pinyon-juniper is the dominant vegetation in the higher mountain elevations around Big Hatchet Peak (BLM 1980). On the mountain slopes and surrounding hills, vegetation consists of a mixed mountain shrub aspect including sumac, agave, buckbrush, beargrass, oak, mountain mahogany, spicebush, snakeweed, mariola, ocotillo, yucca, and creosote. Grass species (gramas, tobosa, muhlys, needle and thread, threeawns, and tridens) are also abundant.

Creosote is the dominant vegetation on gravelly areas surrounding the mountain range. Shrub species that characterize this area are snakeweed, mariola, sumac, ocotillo, graythorn, mesquite, and tarbrush. Grass species include bush muhly, threeawns, tobosa, fluffgrass, and tridens.

Mixed desert shrub occurs on gravelly sand areas in the sandy arroyos of canyon bottoms. These are pseudoriparian areas and have been identified as special habitat for wildlife. Shrub and tree species include Wright's silktassel, agave, beargrass, pale wolfberry, fendlerbush, oak, acacia, juniper, Apacheplume, and mountain mahogany. Grasses include gramas and tridens.

Tobosa grass and tarbush are the dominant vegetation on the deep clayey areas on the west and south sides of the WSA. Creosote invades these areas from the adjacent gravelly sites. Other shrub species include sumac, graythorn, and fourwing saltbush. Associated grasses are burro grass and bush muhly.

Tobosa draw (swale) areas occur on the south side of the WSA. Tobosa occurs in small dense patches with alkali sacaton, burro grass, and vine-mesquite. Invading shrub species are mesquite, snakeweed, tarbush, and creosote.

Mesquite prevails on a small sandy area in the southern part of the WSA. Other associated shrub species are fourwing saltbush and snakeweed.

2. Threatened or Endangered Plant Species

The following species were identified and located in or near the WSA (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus
Status: Bureau sensitive species proposed for Federal listing.
Habitat: widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

Species: Penstemon dasyphyllus - thickleaf beardtongue
Status: Selected by the New Mexico State Heritage Program as a special concern element.
Habitat: Occurs on gravelly slopes and desert grasslands.

Species: Perityle lemmonii - rock daisy
Status: Selected by the New Mexico State Heritage program as a state sensitive species.
Habitat: Grows in crevices of boulders on limestone cliffs from 5,300-5,600 feet.

Species: Coryphantha orcuttii macraxina
Status: Selected by the New Mexico State Heritage program as a special concern element.
Habitat: Occurs above 7,000 feet.

Species: Alates filifolius

Status: Selected by the New Mexico State Heritage program as a state sensitive species.

Habitat: On rocky canyon slopes; commonly associated with pinyon and juniper.

E. Wildlife

1. General

Most of the Big Hatchet Mountains WSA is a mixed shrub mountain habitat site with some significant pockets of pinyon-juniper grass mountain and pseudoriparian sites. Creosote sites occur at the lower elevations.

Cliffs are abundant and important in the range because they provide habitat for nesting raptors and a host of smaller wildlife. Limestone formations such as those in the Big Hatchet Mountains have many caves which are shelter to a variety of wildlife ranging from mountain lions to various species of bats.

Because most of the country around the Big Hatchet Mountains is a lower-elevation, desert shrub landscape, the range has the effect of being an island. Not only do the mountains support a completely different fauna than the surrounding desert, but they are a stopover point for wide-ranging wildlife such as mountain lions (which find a good source of food and cover) and migrating birds.

The resident wildlife population is varied because of the changes in elevation, habitats, and soils within the WSA. An assortment of birds ranging from the mountain-dwelling scrub jay to the desert-dwelling black-throated sparrow could be expected within the WSA.

The New Mexico Department of Game and Fish (NMDGF) has specified the Big Hatchet Mountains as a mule deer herd unit. They expect the optimal population size to be five deer per square mile; presently there are less than this. There is also a javelina population in the WSA. Donaldson (1965) estimated their numbers at 43 animals in 1962.

2. Threatened or Endangered Animal Species

Desert bighorn sheep are the most significant wildlife feature of the WSA. They are a state-listed endangered species. Bighorn sheep were once abundant in the Big Hatchet Mountains. In the early 1950's, as many as 125 to 150 bighorn sheep lived in the Hatchets, using nearly all of the range. Several years of severe drought in the late 1950's and the resultant competition with deer and domestic livestock decimated the herd. By the early 1960's, less than 25 bighorn sheep remained. Their

numbers have stayed low since; this can probably be attributed to predation.

The NMDGF and BLM have committed themselves to the survival of this herd. In 1979, the NMDGF built a paddock in Romney Canyon, 1½ miles west of Big Hatchet Peak and put 11 bighorn sheep from the Redrock Game Farm into this paddock. Historically, this was a bighorn sheep use area. The idea behind this move was not only to supplement the existing herd, but to induce the bighorn sheep to remain in an unused portion of the range. The native herd stays in the southern part of the range and frequently crosses several miles of desert to reach a mineral lick in the Cairn Hills. This desert crossing appeared to make the bighorn sheep vulnerable to predation. It is hoped that the introduced bighorn sheep will stay in the paddock area and not travel to the Cairn Hills. Thus far, the experiment appears successful. The introduced bighorn sheep have moved south toward the indigenous bighorn sheep, probably for breeding, but return to the Hatchet Peak area afterwards. As of August 1981, the introduced herd had increased to 19 animals.

Historically, the gray wolf, a Federal-listed species, was found in all of the "bootheel" country, including the WSA. However, there are no recent documented sightings in the Big Hatchet Mountains. The species barely survives, even in Mexico.

A state-listed species, the Sonora mountain kingsnake, was collected in the Big Hatchet Mountains. This species is tied to moist conditions such as those found in canyons.

F. Visual

The Big Hatchet Mountains have a Class A (high) scenic quality rating. The landform of the Big Hatchet Mountains is characterized by massive, irregularly folded and striated mountains. Colors are pale pinks on peaks or other high elevations where bare stone shows through. In the lower elevations, colors are reddish brown or gray. Texture is grainy with some striations. Vegetation is alternately banded with rock at high elevations and more diffuse toward the bottom. Vegetation colors are the dark green of evergreen trees and shrubs, with yellow-tan grasses at lower elevations.

Portions of the Big Hatchet Mountains WSA are in three Visual Resource Management (VRM) classes as follows: Class II--45,214 acres, Class III--2,560 acres, Class IV--10,240 acres.

G. Cultural

There are several small prehistoric sites that have been reported in this area; however, they have not been recorded or evaluated as to their significance. In addition, there have been no systematic surveys to locate cultural resources.

H. Air

Generally, the quality of air within the Big Hatchet Mountains WSA is good. The air quality in the WSA does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality. The Playas Valley Smelter, located approximately 3 miles west of the WSA boundary, could slightly lower the air quality of the area if weather conditions are such that lower quality air is trapped by an inversion layer which eventually drifts over the WSA. This phenomenon probably would not change the Class II rating of air quality in the WSA.

The only other major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds (commonly gusting in excess of 30 mph) result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals within the Big Hatchet Mountains WSA. However, shows of oil and gas have been reported from the Hatchita Dome wildcat well in T. 30 S., R. 15 W., NMPM, Section 12: SW $\frac{1}{4}$, approximately 1 $\frac{1}{2}$ miles northeast of the WSA, and the Humble State "BA" well in T. 32 S., R. 16 W., NMPM, Section 25, approximately 5 miles southwest of the WSA in the vicinity of U-Bar Ridge. Three Federal oil and gas leases and numerous lease applications have been filed on parcels located within the WSA boundary. Two of the existing leases have no special stipulations attached.

The entire WSA has been classified as prospectively valuable for oil and gas by the Minerals Management Service. The steep mountainous portions of the WSA are outside the area considered to have the best potential for hydrocarbon accumulations due to the exposure and erosion of large quantities of potential reservoir rocks (BLM Mineral Resource Inventory 1981). However, the potential for hydrocarbons, particularly dry gas, in the pediments and bolsons adjacent to the Big Hatchet Mountains, is good. The Big Hatchet Mountains area and adjacent valleys are considered favorable localities within the Pedregosa Basin and the Overthrust Belt for exploration and possible accumulations of hydrocarbons (Greenwood, et al. 1977; Greenwood 1969; Wengard 1970; Zeller 1970). Many petroleum geologists familiar with the area have compared the Pedregosa Basin of Hidalgo County to the prolific Permian Basin of west Texas and eastern New Mexico.

There are three major factors which are positive indicators for hydrocarbons in the Big Hatchet Mountains area. These are: (1) a thick sequence (15,000 feet) of Paleozoic and Cretaceous marine sediments containing numerous potential source beds and reservoir rocks; (2) favorable structural and stratigraphic rocks; and (3) shows of gas in the Humble "BA" well and oil and gas in the Hatchita Dome well. Placid Oil Company, ARCO, May Petroleum, Gulf Oil Company, and Exxon USA have all indicated interest in the Big Hatchet Mountains area, especially near U-Bar Ridge. Dawson Geophysical, Geophysical Services Inc., Grant Geophysical, Geosource Inc., Pac-West Geophysical, Arma Geophysical, Daniel Geophysical, and Tidelands Geophysical have all applied for or conducted seismic surveys in the vicinity of the Big Hatchet Mountains.

A protective stipulation is presently attached to all oil and gas leases to protect the desert bighorn sheep and its habitat in the Big Hatchet Mountains (Big Hatchets-Alamo Huecos Oil and Gas Leasing EA, BLM 1980; revised 1982). The desert bighorn sheep habitat area covered by the protective stipulation includes most of the WSA. This stipulation applies to all phases of the energy minerals program. Planning documents recommend continuation of the protective stipulation (BLM 1983).

2. Non-Energy Minerals

Several subeconomic deposits of locatable minerals occur in the Big Hatchet Mountains. These include lead, zinc and silver mines, and a copper prospect. These minerals are on the National Defense Stockpile Inventory of Strategic and Critical Minerals. Gypsum also occurs in the Big Hatchet Mountains in fairly significant amounts, but it is too remote from any market place to be of economic significance in today's market. There are currently 8 mining claims recorded within the WSA; all were located prior to the passage of the Federal Land Policy and Management Act on October 21, 1976, and are "grandfathered."

Gravity studies of the Big Hatchet Mountains have revealed the presence of a magnetic anomaly on the eastern side of the range. This could be an indication of an ore body at depth. Rosario Exploration Company (in May 1981) completed a 250-foot hole in T. 31 S., R. 14 W., NMPM, Section 21: SW $\frac{1}{4}$, but obtained no additional insight into the anomaly. The company is planning to drill again in a different location and remains optimistic about the possibility of locating an ore body.

According to Kottowski (1962), high calcium-low magnesium (cement-grade) limestone occurs throughout the Big Hatchet Mountains. The major obstacle in mining such deposits is the distance to market. The potential for non-energy minerals is poor.

B. Watershed

Water use within the Big Hatchet Mountains WSA is primarily by livestock and wildlife. There are nine wildlife water developments inside the WSA designed to catch and store relatively small amounts of precipitation (see Chapter III, Wildlife). Also within the WSA, there are five dirt tanks that provide seasonal water use, a storage tank, and a drinking trough (see Chapter III, Livestock Grazing). Several well facilities and dirt tanks are located just outside the WSA boundary that are for livestock watering and limited domestic use.

A portion of the western boundary of the Big Hatchet Mountains WSA is within the Playas Valley declared underground water basin and groundwater use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of three grazing allotments are present within the Big Hatchet Mountains WSA. Most of the Big Hatchet Mountain range is not grazed by livestock due to steep slopes. Licensed grazing use on public land includes cattle and a few horses. U-Bar (2022) and the Heard Ranch (2024) are part of the Pacific Western/Phelps-Dodge Corporation. The Hatchet Ranch (2027) is under an implemented Allotment Management Plan (AMP).

ALLOTMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSA	Percent Allotment
U-Bar 2022	39,006	7,608	5,690	15%
Heard Ranch 2024	14,826	1,356	14,382	97%
Hatchet Ranch 2027	115,729	13,944	37,942	33%
TOTAL			58,014	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSA^{a/}

Allotment Name and Number	Type of Development	Location
U-Bar 2022	interior fence	$\frac{1}{2}$ mile
Heard Ranch 2024	storage tank and trough interior fence	T. 31 S., R. 15 W., Sec. 29 2 miles
Hatchet Ranch 2027	dirt tank dirt tank dirt tank dirt tank dirt tank interior fence	T. 30 S., R. 15 W., Sec. 34 T. 31 S., R. 15 W., Sec. 12 T. 31 S., R. 15 W., Sec. 10 T. 31 S., R. 14 W., Sec. 31 T. 31 S., R. 15 W., Sec. 35 6 $\frac{1}{2}$ miles

Boundary Fences:	Heard Ranch 2024 and U-Bar 2022	2 miles
	Hatchet Ranch 2027 and U-Bar 2022	3 miles

Note: a/Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

D. Recreation

The Big Hatchet Mountains are a state game refuge and are closed to hunting. Opportunities for recreation in the WSA are for primitive, dispersed activities and are described in Chapter IV, Primitive and Unconfined Recreation.

E. Education/Research

The main research in this area involves the desert bighorn sheep population (see Chapter II, Wildlife). There is a potential for paleoenvironmental studies in dry caves.

F. Realty Actions

A communication site, consisting of one small antenna and battery pack, is located on top of Big Hatchet Peak. At present, there is no record of a right-of-way being granted for this installation, and the site is unauthorized. Maintenance frequency and responsibility have not been determined.

G. Wildlife

There are a number of wildlife waters which were constructed for desert bighorn sheep. Nine umbrella or metal apron units are within the Big Hatchet Mountains WSA. Another umbrella unit is on a state section adjacent to the WSA, but influences the bighorn sheep in the WSA since it is a source of water in a major use area.

Mineral supplement stations have been placed in the Big Hatchet Mountains. Use of these stations by the indigenous bighorn sheep has cut down on movement of the bighorn sheep to the Cairn Hills (Bavin 1982).

A Habitat Management Plan (NMDGF and BLM 1982) has been written for the Big Hatchet-Alamo Hueco complex. The planned action includes fencing some canyons to keep cattle out during the growing seasons. Predators would be controlled until the bighorn sheep herd stabilizes. Mineral licks would be maintained. At the base of the mountains, vegetation manipulation may be used on some creosote areas. More new waters may be developed or old nonfunctional ones rejuvenated.

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The apparent naturalness of the Big Hatchet Mountains WSA is affected by a variety of imprints of man: rangeland developments, wildlife waters, vehicle trails and roads, and mining activity.

Rangeland developments within the WSA include dirt tanks and fences. The fences and the majority of the dirt tanks are in the lower elevations. The windmill in Sheridan Canyon is on private land. Nine wildlife waters are dispersed throughout the mountain range. The impacts of these developments are mitigated by the large size of the WSA, the dispersed locations of the developments, and topographic screening. These imprints have an insignificant impact on naturalness.

The road through Sheridan Canyon does not have a significant impact on naturalness. The part of the road in T. 31 S., R. 15 W., Sections 13, 24, and 23, follows a very rocky arroyo and requires a four-wheel drive vehicle. The rest of the road south of Sheridan Windmill, although originally constructed and maintained, is not a well improved road.

Mining impacts in the WSA are insignificant. The patented mines in Sheridan Canyon and the Proverbial Gyp mining claims are presently inactive. The visual impacts of past activity are only noticeable in the general vicinities of the mines.

The Big Hatchet Mountains WSA appears to have been affected primarily by the forces of nature. The core of the WSA, which consists of the Big Hatchet Mountain range, is especially natural. The imprints of man are substantially unnoticeable because of the large size and rugged topography of the WSA.



Overview of the Big Hatchet Mountains from Thompson Canyon.

b. Solitude

The Big Hatchet Mountains WSA provides outstanding opportunities for solitude. The large size of the WSA and generally well blocked-up configuration allow visitors to disperse and avoid the sights and sounds of others. The rugged topography of the Big Hatchet Mountains provides numerous secluded canyons and ridges. Many of the canyons, such as Thompson Canyon, also have quite a bit of vegetative screening. Outstanding opportunities for solitude are available throughout the WSA.

c. Primitive and Unconfined Recreation

There are outstanding opportunities for primitive and unconfined recreation in the Big Hatchet Mountains WSA. The boundary roads surrounding the WSA require high clearance or four-wheel drive vehicles, so motorized recreation within the WSA is discouraged.

Primitive recreation opportunities within the WSA include hiking, backpacking, horseback riding, mountain climbing, and sightseeing. The rugged terrain and large size of the WSA provide for these outstanding and challenging recreation opportunities.

The outstanding solitude and remoteness of the area enhance the primitive aspects of recreational experiences in the WSA. Opportunities for sightseeing are good throughout the WSA. The lucky visitor might catch a glimpse of the desert bighorn sheep.

2. Special Features

The Big Hatchet Mountains WSA contains special ecological and scenic features. The ecological features include both vegetation and wildlife values of scientific and educational interest. The Big Hatchet Mountains provide habitat for one Bureau sensitive plant species proposed for Federal listing, two state sensitive plant species, and two plant species selected by the New Mexico State Heritage Program as special concern elements (see Chapter II, Vegetation). The Big Hatchet Mountains WSA contains special habitat features such as cliffs for nesting raptors and caves which provide shelter for a variety of wildlife. Two state endangered animal species are found in the area; the desert bighorn sheep and the Sonora mountain kingsnake. The desert bighorn sheep have received a significant amount of study by the New Mexico Department of Game and Fish (see Chapter II, Wildlife).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the Big Hatchet Mountains WSA as being in the Mexican Highlands Shrubsteppe Province with a potential natural vegetation of oak-juniper woodland.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSA. Further refinement of the system shows the following vegetation types in the WSA:

<u>Vegetation Types</u>	<u>Acres</u>
mountain mahogany oak scrub	28,752
creosote	26,166
Trans-Pecos shrub savanna	316
grama tobosa shrubsteppe	2,758
mesquite-acacia savanna	22

b. Distance from Population Centers

The Big Hatchet Mountains WSA is approximately 4 hours driving time from El Paso, Texas; 3 hours from Las Cruces, New Mexico; 6 hours from Albuquerque, New Mexico; 4 hours from Tucson, Arizona; and 6 hours from Phoenix, Arizona.

B. Manageability

Several characteristics of the Big Hatchet Mountains WSA affect the ability of the BLM to manage the area to preserve present wilderness values: pre-FLPMA mining claims, nonpublic lands, pre-FLPMA oil and gas leases, the Sheridan Canyon road, and the cherry-stemmed road.

There are eight pre-FLPMA mining claims in the Big Hatchet Mountains WSA. The presence of these claims affects the manageability of the WSA in two ways:

1. During the time that an area is under wilderness review, the WSA is managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP) (BLM 1979). Under the IMP, mining claimants are recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976. If the claimant can show evidence of his discovery to the BLM, activities for the use and development of the claims will be exempt from the nonimpairment criteria of the IMP. Mining operations on such claims would be regulated only to prevent unnecessary or undue degradation of the WSA. Therefore, the possibility exists that the wilderness values of the Big Hatchet Mountains WSA could be degraded before the area is designated wilderness if the above criteria are met.
2. Once an area is designated wilderness, the provisions of the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the WMP, holders of mining claims validly established in the area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations "Surface Management of Public Lands Under U.S. Mining Laws." Exercise of the rights of mining claimants must be with the least possible impact on

the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land. In this case, there is a possibility that the wilderness values of the WSA could be degraded after the area is designated wilderness.

The likelihood of development on these claims is remote due to the subeconomic nature of the deposits. The presence of the claims does not pose a major obstacle to wilderness management of the area at the present time.

Private land affecting the manageability of the WSA consists of two patented mining claims. At the present time, the mines are subeconomic and inactive. There are state land inholdings and cherry-stemmed state land associated with the WSA. (See Map 1 for land status.) All of the state land is leased for oil and gas, and rangeland developments are located on some of the state land.

Parts of three pre-FLPMA oil and gas leases overlap the WSA boundary. Two of these leases are approximately 1 mile northwest of U-Bar Ridge. One of the leases near U-Bar Ridge has a No Surface Occupancy stipulation and expires October 31, 1986. The other lease near U-Bar Ridge expires July 31, 1985, and has no special stipulations. The third pre-FLPMA lease is along the north boundary of the WSA. It has no special stipulations and expires September 31, 1986.

The nonpublic lands and pre-FLPMA oil and gas leases limit the degree of BLM control over the WSA. Additional development on any of the nonpublic lands or development of the pre-FLPMA oil and gas leases and development of necessary access would negatively impact basic wilderness values (roadlessness, size, naturalness, solitude, and primitive recreation). Development also could impact the area's most significant supplemental value, the desert bighorn sheep.

The Sheridan Canyon road does not receive much use at present. If vehicular use of the road should increase, opportunities for solitude in the canyon would diminish. Increased vehicular use could also stress the desert bighorn sheep. The same impacts, to a lesser degree, could occur if vehicular use increases on the road cherry-stemmed into the WSA.

The impacts of the manageability problems discussed are significant in the southwest part of the WSA northwest of U-Bar Ridge. There are 320 acres of cherry-stemmed state land, one cherry-stemmed road, and 2 pre-FLPMA oil and gas leases in this part of the WSA. In addition, there is good oil and gas potential in this area of the WSA. There is serious potential for nonwilderness uses negatively impacting the southwest part of the WSA in the flats northwest of U-Bar Ridge, especially since the area has high oil and gas potential. The remainder of the WSA could be managed to preserve its wilderness characteristics over the long-term.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the Big Hatchet Mountains WSA during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The Big Hatchet Mountains WSA proposal was among the ten most commented on recommendations in the state. A list of mining claims, photographs, road affidavits, and maps were included with the comments.

Approximately 58 percent of the personal letters supported wilderness review of the Big Hatchet Mountains. The supporting comments concentrated on outstanding opportunities for solitude and primitive recreation and the supplemental geological, scenic, and wildlife values of the area.

Approximately 42 percent of the personal letters opposed wilderness review of the area. Opposing comments stated that the area should be dropped from further consideration for the following reasons: oil and gas potential, hardrock minerals, nonpublic land inholdings, dull topography, undesirable vegetation, low potential for rehabilitation, and lack of basic wilderness criteria. One comment noted that due to the wildlife management problems of the desert bighorn sheep, they could hardly be considered a supplemental value.

VI. ALTERNATIVES AND IMPACTS

A. All Wilderness

Under this alternative, the entire 58,014 acres of public land within the Big Hatchet Mountains WSA would be recommended suitable for wilderness designation. (See Map 6 for the WSA boundary.)

If designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981) as follows.

Generally, motorized access on vehicle trails within the WSA would not be allowed. However, permits for vehicular access to maintain existing rangeland developments and wildlife waters in the WSA could be authorized under the WMP.

The desert bighorn sheep would be managed under the Big Hatchets-Alamo Huecos Habitat Management Plan (HMP). Some of the projects proposed in the HMP would require State Director approval before implementation. Management of the desert bighorn sheep would take precedence over recreation uses.

The area would be managed as a VRM Class I.

The pediment and bolson areas surrounding the Big Hatchet Mountains have valuable oil and gas potential. Therefore, it is assumed that exploration and development would occur on the three pre-FLPMA leases along the north and west edges of the WSA and on state sections in the pediment and bolson area.

The unauthorized communications site on top of Big Hatchet Peak would be removed.

The All Wilderness Alternative would not have significant impacts on recreation, cultural, air, and education/research in the Big Hatchet Mountains WSA. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

There is currently no production of minerals within the WSA. After wilderness designation, existing leases, if unexplored, would not be reissued and there would be no new leasing. Assuming that 58,014 acres of Federal minerals within the WSA could have been leased noncompetitively at an annual rental fee of \$1.00 per acre, \$58,014 of annual leases (which the State of New Mexico receives 50 percent) would be lost after wilderness designation. If a discovery were made in an area adjacent to the WSA, energy minerals would be impacted in the long-term because there would no longer be an opportunity to fully evaluate the oil and gas potential in the WSA.

The economic benefit forgone would be lost expenditures and jobs in the local economy as well as royalties paid from production.

Because of the No Surface Occupancy Stipulation attached to one of the three pre-FLPMA leases in the WSA, development of this lease may have an impact on operation costs. There would be no economic impact on exploration and development costs of the other two pre-FLPMA oil and gas leases because they have no special stipulation attached. Presently, impacts to minerals are minimal on the national scale.

Impacts to locatable minerals are presently insignificant due to the current low demand and distance to market. The type and location of access to valid existing claims may have an economic impact on operations.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Restrictions on surface disturbing and mechanized activities would provide long-term protection for the existing water, soils, and vegetation including Federal and state listed threatened or endangered plant species (see Chapter II, Vegetation) in most of the steep mountainous portions of the WSA.

A significant loss of vegetation and topsoil would result from oil and gas exploration and development on state sections and existing pre-FLPMA oil and gas leases. The impacts could be moderate to major depending on the locations and extent of development and access requirements.

b. Wildlife

Restrictions on mineral and other developments would be imposed by the WMP, and this would protect wildlife habitat from degradation. Desert bighorn sheep and other species would be protected from human disturbance. However, pre-FLPMA oil and gas leases and private and state land in the pediment and bolson areas could still be developed. Most of these areas are far enough from bighorn sheep habitat that development would be insignificant.

The HMP proposes projects and monitoring studies for bighorn sheep. These projects and studies might be restricted or authorized only on approval from the State Director. If there were an increase in recreational visitors, this would be detrimental to bighorn sheep. However, the WMP contains provisions

which would allow the BLM to manage the area so that survival of desert bighorn sheep is given priority over recreational uses.

Since the Big Hatchet Mountains would be less accessible, the Sonora mountain kingsnake would be slightly impacted. Conservation measures for the kingsnake, a state-endangered species, are listed as protection against wanton killing and unnecessary collecting (Hubbard 1979).

c. Visual

Visual resources would be protected. Minor modifications in the basic elements of the landscape as a result of natural ecological changes and very limited management activity would be permitted.

Oil and gas exploration and development on state land along the pediments of the mountains, in the flats, and on existing pre-FLPMA leases would degrade existing visual resources.

d. Livestock Grazing

Permits for vehicular access could be authorized for maintenance of the following rangeland developments: storage tank and trough on Heard Ranch (2024), and 5 dirt tanks and 2 miles of interior fence on the Hatchet Ranch (2027). Slight impacts could result to the livestock operator when monitoring livestock activity because of restricted vehicular access.

e. Realty Actions

The existing communication facility is unauthorized and would be removed.

f. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. The area would be managed to maintain its natural appearance and opportunities for solitude and primitive recreation. The removal of the unauthorized communication site on top of Big Hatchet Peak would slightly enhance naturalness. The management of the desert bighorn sheep population through the HMP would further enhance the special features of the area.

Several factors could impact the capability of managing the entire Big Hatchet Mountains WSA as wilderness. Although extensive development of the

pre-FLPMA mining claims and patented mining claims in the WSA is unlikely, development could occur under a wilderness designation. Oil and gas exploration and development on the state land along the pediments of the mountains is a possibility, as is development of existing pre-FLPMA oil and gas leases on the north and west boundaries of the WSA. The impacts of mining operations and oil and gas activities could be minimal to major depending on the extent of development and access requirements. Vehicular use on the cherry-stemmed road in the WSA and the road through Sheridan Canyon would disturb solitude in the vicinity of the roads.

The impacts of the manageability problems discussed are especially significant in the area around U-Bar Ridge. The combination of state land, a cherry-stemmed road, and existing pre-FLPMA oil and gas leases could result in the significant degradation of wilderness values in the southwest part of the WSA, north of U-Bar Ridge.

The following factors affect the ability of the BLM to manage the Big Hatchet Mountains WSA to preserve existing wilderness values: nonpublic lands, existing pre-FLPMA oil and gas leases, the Sheridan Canyon Road, and the cherry-stemmed road. These factors are discussed in Chapter IV, Manageability.

B. Amended Boundary

Under the Amended Boundary Alternative, 41,293 acres of public land within the Big Hatchet Mountains WSA would be recommended suitable for wilderness designation (see Map 6 for the amended WSA boundary). The amended boundary would exclude 16,721 acres of public land surrounding the Big Hatchet Mountain range. If the area within the amended boundary is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981) as follows.

Generally, motorized access on vehicle trails within the amended boundary would not be allowed. However, permits for vehicular access to maintain existing rangeland developments and wildlife waters within the amended boundary could be authorized under the WMP.

Desert bighorn sheep habitat would be managed under the Big Hatchets-Alamo Huecos HMP. Management of the sheep would take precedence over recreation uses.

The unauthorized communication site on top of Big Hatchet Peak would be removed.

The area within the amended boundary would be managed as a VRM Class I.

Oil and gas exploration and development could occur on the state sections in the pediment and bolson area. Oil and gas exploration and development could also occur in the pediment and bolson areas outside of the amended boundary within the constraints of a protective oil and gas leasing stipulation for endangered species (including desert bighorn sheep) and nesting raptors.

The Amended Boundary Alternative would not have significant impacts on recreation, cultural, air, and education/research in the Big Hatchet Mountains WSA. For this reason, these resources were not included in the following discussions.

1. Impacts to Minerals

Under the Amended Boundary Alternative, more land would be open to oil and gas leasing. Those areas more valuable for oil and gas would be available for exploration, leasing, and possible development subject to the protective stipulation for endangered species and nesting raptors. On leases within the amended boundary existing at the time of designation, directional drilling could be utilized and explored leases could be renewed. The impacts would be minimal on a national scale because the more favorable areas, such as U-Bar Ridge, are excluded from the amended WSA boundary.

Since some of the more valuable oil and gas potential areas would be available for exploration and possible development, the economic impacts would be negligible. It is assumed that sometime after the area is designated, no new leasing would be allowed on public land. If this occurs, approximately 41,293 acres of Federal minerals within the amended boundary that have been identified as having potential for oil and gas leasing would not be leased. If the leases are all noncompetitive and the annual rental fee is \$1.00 per acre, \$41,293 of annual leases, of which the State of New Mexico receives 50 percent, would be lost. All other impacts to minerals would be the same as discussed under the All Wilderness Alternative.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Restrictions on surface disturbing and mechanized activities would provide long-term protection for existing water, soils, and vegetation including Federal and state listed threatened or endangered plant species (see Chapter II, Vegetation). Impacts

to vegetation and soils would be minor. Most of the habitat for the plant species Cereus greggii and Penstemon dasyphyllus would be excluded from the area recommended suitable.

b. Wildlife

Under this alternative, wildlife would receive similar protection to that described under the All Wilderness Alternative. However, the impact would be less because the area is smaller. The wildlife habitats protected by wilderness designation would be less varied because the creosote habitat would be excluded from the area recommended suitable (see Chapter II, Wildlife). The amended boundary would not greatly affect the desert bighorn sheep because their habitat is mainly within the mountain area.

c. Visual

The existing visual resources of the area within the amended boundary would be protected. An area of approximately 41,293 acres of public land encompassing the majority of the Big Hatchet Mountain range would be managed as a VRM Class I.

d. Livestock Grazing

Impacts to livestock grazing would be the same as those described under the All Wilderness Alternative, except that most of the U-Bar allotment (2022) would be outside of the amended boundary.

e. Realty Actions

The existing communication facility is unauthorized and would be removed.

f. Wilderness Values

The central part of the WSA where the WSA's highest wilderness values and special features are concentrated would be protected through long-term Congressional designation. Approximately 16,721 acres surrounding the mountain range would not be protected by Congressional designation. Management of the excluded acreage as specified in land use plans would be subject to administrative change in the long-term. However, the exclusion of these areas improves the manageability of the area by excluding existing pre-FLPMA oil and gas leases located in an area with excellent development potential. The entire area could be managed to retain its wilderness character.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the Big Hatchet Mountains WSA would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing and potential uses (see Chapter III) would continue without regard to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) as follows.

The desert bighorn sheep would be managed under the Big Hatchets-Alamo Huecos HMP. All projects proposed in the HMP could be implemented.

Approximately 45,214 acres in the central part of the WSA would be managed as a VRM Class II. Approximately 2,560 acres in the southeast and east parts of the WSA would be managed as a VRM Class III. Approximately 10,240 acres in the east and southeast parts of the WSA would be managed as a VRM Class IV.

Oil and gas exploration and development could occur on the state sections in the pediment and bolson area. Oil and gas exploration and development could occur on Federal land in the pediment and bolson areas within the constraints of a protective oil and gas leasing stipulation for endangered species (including desert bighorn sheep) and nesting raptors.

The No Action/No Wilderness Alternative would not have significant impacts on cultural, air, and education/research in the Big Hatchet Mountains WSA. For this reason, these resources were not included in the following discussions.

1. Impacts to Wilderness Values

The wilderness values and special features of the Big Hatchet Mountains WSA would not be provided with long-term Congressional protection.

Oil and gas exploration and development along the pediments of the mountains and in Sheridan Canyon would result in the irrevocable degradation of natural values and opportunities for solitude in these areas. The existing non-motorized types of recreation would be impacted by the deterioration of natural values and the increased presence of man. The oil and gas leasing protective stipulation for desert bighorn sheep, covering most of the mountain range, would protect the WSA's most significant special feature, the bighorn sheep, and as a result also provide some protection of existing wilderness values.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There would be a significant loss of vegetation along the pediments of the mountains and in Sheridan Canyon and other wide canyons resulting from oil and gas exploration and development over the long-term. Where topsoil is removed for drill pad sites, soil fertility would be moderately decreased. Impacts to water resources would not be significant. Of the five Federal and state listed threatened or endangered plant species in the WSA, three inhabit rocky or gravelly areas where much of the oil and gas activity could take place (see Chapter II, Vegetation). Their habitat could be impacted through surface disturbing activities.

b. Wildlife

Desert bighorn sheep and the Sonora mountain kingsnake would be protected from the development of new oil and gas leases by the protective stipulation. The Big Hatchet-Alamo Hueco HMP actions also would protect bighorn sheep habitat. Other species are given no special protection. This could be especially significant for javelina since the Big Hatchet Mountains have significant javelina habitat (see Chapter II, Wildlife). Some animals would be disturbed by human presence. Additional human presence could lead to poaching. The impacts of developing the existing pre-FLPMA oil and gas leases would be insignificant.

c. Visual

In the VRM Class II areas, minor to moderate changes in the basic elements of the landscape as a result of management actions would be permitted as long as the changes do not attract attention. In VRM Class III areas, moderate changes in the landscape as a result of management actions would be allowed as long as the visual contrast is subordinate to the existing landscape. In VRM Class IV areas, significant changes in the basic elements of the landscape as a result of management activities would be permitted.

The existing Class A scenic quality in the central mountainous part of the WSA would be substantially maintained under the VRM Class II, at least in the short-term.

Oil and gas development along the pediments of the mountains and in the flats could degrade visual

resources in the long-term under a VRM Class III and IV.

d. Minerals

Impacts to minerals would be less than under the All Wilderness Alternative because the entire WSA area would be open to leasing and exploration without the wilderness protection stipulation. However, the protective stipulation for endangered species and nesting raptors would still apply in this area. If oil and gas exploration and development occur, the economic benefits under this alternative would be favorable to the local economy. The average monthly expenditures in 1980 for a typical seismic crew was approximately \$70,000. The seismic crew employed approximately 33 people, of which 10 to 15 percent are employed from the local labor force. Almost all the money from the seismic operation is spent in the local economy (BLM Big Hatchets-Alamo Hueco Oil and Gas Leasing EA 1980; revised 1982).

Locatable strategic minerals would be impacted to a lesser degree than leasables because they would not have the protective stipulation associated with casual use exploration. Most activities would fall under the Surface Management Regulations (43 CFR 3809) and all Plans of Operation would be evaluated for disturbance of other resources values to include compliance of Section 7 of the Endangered Species Act. There would be no economic benefits forgone to the locatable strategic minerals industry under this alternative.

e. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized equipment. Under this alternative, there would be no impacts to livestock grazing.

f. Recreation

Oil and gas development in the Big Hatchet Mountains would require the upgrading of existing access into the area as well as construction of new access. Improved access could result in a change in the types and amount of recreation use now occurring. ORV use could increase.

g. Realty Actions

The existing communication facility located on top of Big Hatchet Peak is unauthorized. According to

current right-of-way (ROW) regulations, an applicant may file for a ROW before July 31, 1984, for an unauthorized ROW that existed on public land prior to October 21, 1976. If a significant impact to other resources is found when reviewing the application, an alternative would be the removal of the facility. If an application is not received by July 31, 1984, trespass procedures would be initiated.

Approximately 45 acres of private land and 2,350 acres of state land within and adjacent to the area recommended for wilderness should have a high priority for acquisition if the area is designated wilderness.

B. Rationale

The part of the Big Hatchet Mountains WSA recommended suitable for wilderness designation in the Amended Boundary Alternative has high quality wilderness values. The Amended Boundary Alternative also minimizes both conflicts with energy mineral resources and management programs.

The area recommended suitable for wilderness designation encompasses the Big Hatchet Mountain Range where the majority of the WSA's wilderness values and special features are concentrated. The most challenging and natural terrain with the best opportunities for solitude and primitive recreation and most of the desert bighorn sheep habitat would be included in the area recommended suitable for wilderness designation.

The Amended Boundary Alternative substantially reduces conflicts with oil and gas resources. This WSA is generally valuable for oil and gas reserves, especially along the basement of the mountains, the surrounding flats, and around U-bar Ridge.

There are three pre-FLPMA oil and gas leases located in the flats around the mountain that could be explored and developed whether or not the area is designated wilderness. The Amended Boundary Alternative eliminates potential wilderness management conflicts by excluding the lands encumbered by pre-FLPMA leases.

The acquisition of state land within and adjacent to the area recommended suitable for wilderness designation would enhance the manageability of the area as wilderness in the long-term. Management of the acquired land as wilderness would eliminate the potential impacts on wilderness values of nonwilderness uses on the state section and the potential impacts of granting access across the WSA to state landholdings.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The recommended action for the Big Hatchet Mountains WSA is the Amended Boundary Alternative. A total of 41,293 acres would be recommended suitable for wilderness designation and 16,721 acres would be recommended unsuitable for wilderness designation.

Approximately 46 acres of private land and 5,280 acres of state land within and adjacent to the area recommended suitable for wilderness should have a high priority for acquisition if the area is designated wilderness.

B. Rationale

The part of the Big Hatchet Mountains WSA recommended suitable for wilderness designation in the Amended Boundary Alternative has high quality wilderness values. The Amended Boundary Alternative also minimizes both conflicts with energy mineral resources and manageability problems.

The area recommended suitable for wilderness designation encompasses the Big Hatchet Mountain range where the majority of the WSA's wilderness values and special features are concentrated. The most challenging and natural terrain with the best opportunities for solitude and primitive recreation and most of the desert bighorn sheep habitat would be included in the area recommended suitable for wilderness designation.

The Amended Boundary Alternative substantially reduces conflicts with oil and gas resources. This WSA is potentially valuable for oil and gas reserves, especially along the pediments of the mountains, the surrounding flats, and around U-Bar Ridge.

There are three pre-FLPMA oil and gas leases located in the flats around the mountains that could be explored and developed whether or not the area is designated wilderness. The Amended Boundary Alternative eliminates potential wilderness management conflicts by excluding the lands encumbered by pre-FLPMA leases.

The acquisition of state land within and adjacent to the area recommended suitable for wilderness designation would enhance the manageability of the area as wilderness in the long-term. Management of the acquired land as wilderness would eliminate the potential impacts on wilderness values of nonwilderness uses on the state sections and the potential impacts of granting access across the WSA to state inholdings.

APPENDIX G

WEST POTRILLO MOUNTAINS AND MOUNT RILEY WSA (NM-030-052)

I. GENERAL DESCRIPTION

A. Location

The West Potrillo Mountains and Mount Riley Wilderness Study Areas (WSAs) are located in southwestern Dona Ana County. A small part of the West Potrillo Mountains WSA extends west into Luna County. The WSAs are approximately 30 miles southwest of Las Cruces, New Mexico, and 50 miles north-northwest of El Paso, Texas.

The following U.S. Geologic Survey (USGS) topographic maps cover the WSAs:

Aden, New Mexico	- 15 minute scale
Mount Riley, New Mexico	- 15 minute scale
X-7 Ranch, New Mexico	- 7½ minute scale
POL Ranch, New Mexico	- 7½ minute scale
Camel Mountain, New Mexico	- 7½ minute scale

B. Climate and Topography

The West Potrillo Mountains and Mount Riley WSAs are characterized by an arid, continental climate, with mild winters and pleasant to hot summers.

Average annual precipitation in the area is around 8 inches, with locally larger amounts at higher elevations. A wide variation in annual totals is characteristic of arid climates as illustrated by annual extremes of 19.60 and 3.62 inches recorded by New Mexico State University during a 74 year period of record. More than half of the moisture normally falls during July, August, and September from convective thundershowers that are commonly intense and of short duration. In the winter, some light snow falls on the average of two years out of three at higher elevations, but usually melts within a few days.

During the summer months, daytime temperatures quite often exceed 100°F. The average monthly maximum temperature during July, the warmest month, is slightly above 90°F. In January, the coldest month, average monthly minimum temperature is in the middle 20's.

Winds generally predominate from the southeast in summer and from the northwest in winter. Wind speeds are usually moderate. Spring is the windy season. Dry, gusty winds are

predominantly from the west and may exceed 30 mph in the afternoons.

The West Potrillo Mountains and Mount Riley WSAs contain a variety of terrain. The outstanding topographic features are the volcanic cones of the West Potrillo Mountains, the Mount Riley peaks, and Indian Basin.

Over 48 of the West Potrillo Mountains volcanic cones are concentrated in a north-south orientation through the center of the WSA. The cones range from 1,000-3,000 feet in diameter and elevations at the tops of the highest peaks reach 5,400 feet.

Mount Riley and Mount Cox are two of the three high, steep intrusive peaks clustered together east of the West Potrillo Mountains. The highest peak reaches an elevation of nearly 6,000 feet. Prominent talus cones and alluvial fans surround the base of the peaks.

Indian Basin, a large depression in the southwest part of the West Potrillo Mountains WSA, is rimmed with sand dunes. The Basin's bottom elevation of 4,029 feet is about 75 feet below the surrounding desert floor.

C. Land Status

The West Potrillo Mountains and Mount Riley WSAs contain 148,345 acres and 6,760 acres of public land, respectively. There is a total of 155,105 acres in both WSAs. The West Potrillo Mountains WSA is the largest BLM WSA in New Mexico.

There are no private or state owned surface inholdings in the Mount Riley WSA. A subsurface mineral estate inholding of 640 acres in the Mount Riley WSA is in private ownership.

There are 12,051 acres of state land within the boundary of the West Potrillo Mountains WSA. (See Map 7 for land status.)

D. Access

The West Potrillo Mountains and Mount Riley WSAs are legally accessible from County Roads A03, A05, and A07. County Road A03 forms the southern boundary of the West Potrillo Mountains WSA. This road is known as the Columbus-to-Anapra road and parallels the New Mexico-Mexico border.

County Road A05 branches north from A03 to form the southeast boundary of the West Potrillo Mountains and the west boundary of Mount Riley. At the southern tip of the Mount Riley WSA, County Road A07 branches northeast from A05 to form the east boundary of Mount Riley.

A ranch road continuing north-northeast from County Road A07 ties into a network of roads forming the north and west boundaries of the West Potrillo Mountains WSA.

MAP 7

WEST POTRILLO MTS. & MT. RILEY WSA (NM 030-052)

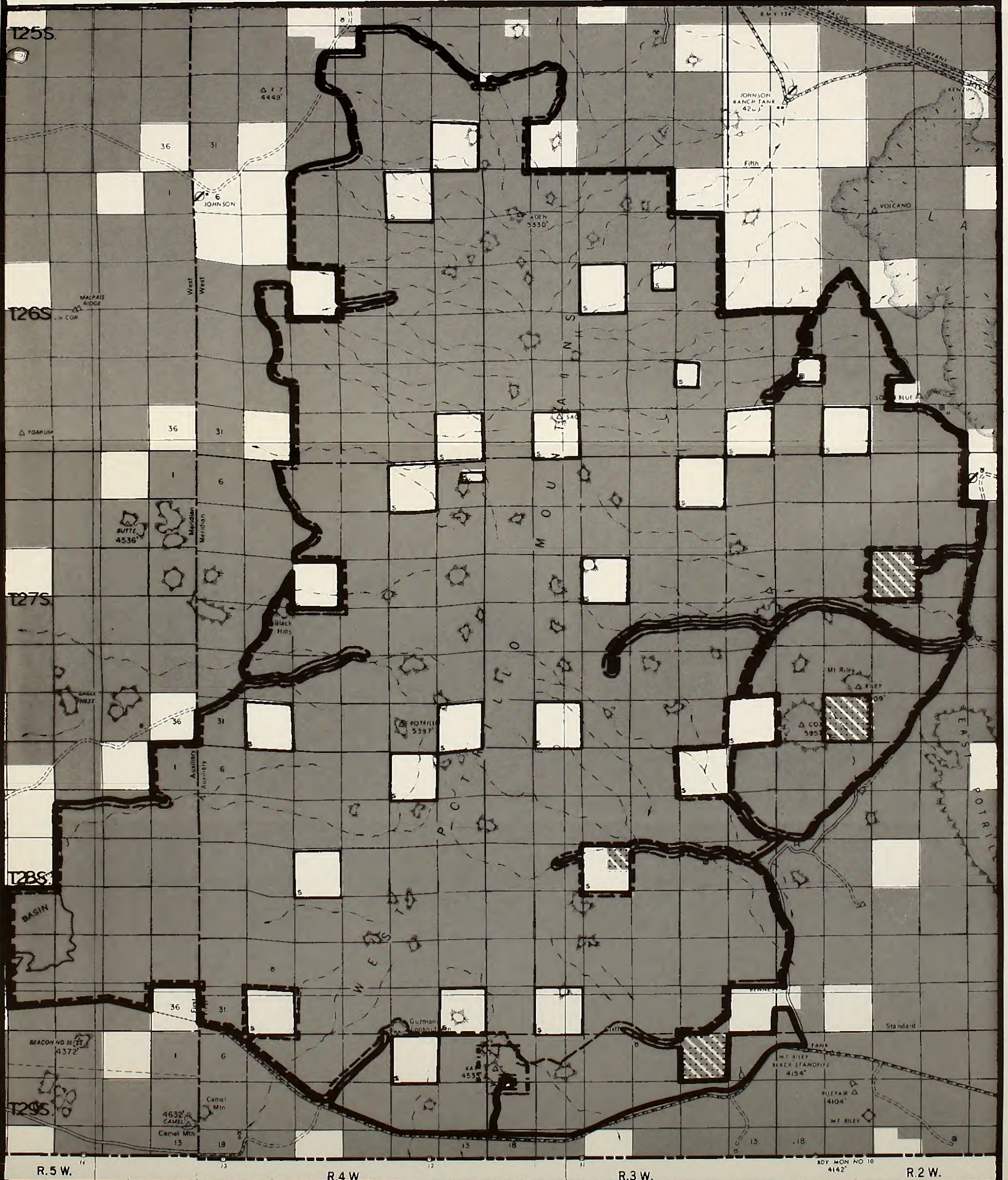
Legend
 — WSA BOUNDARY
 - - - AMENDED BOUNDARY
 LANDS REMOVED FROM WSA STATUS AFTER
 REINVENTORY

Land Status*
 BLM
 PRIVATE
 STATE
 BLM SURFACE/NON BLM SUBSURFACE
 - - - CHAPPARRAL CINDER CLAIMS

Scale: 1/2 Inch = 1 mile

* State, Private and Non BLM Subsurface ownership is identified only inside the WSA boundary.

Source: USDI BLM, Las Cruces District, 1982



II. EXISTING RESOURCES

A. Geology

The West Potrillo Mountains and Mount Riley WSAs are situated within the Basin and Range Physiographic Province. This Province is characterized by fault block mountains separated by basins filled with alluvial and shallow lake sediments.

Locally, the WSAs lie within a major structural intermontane basin known as the Mesilla Bolson and are within the Rio Grande rift system. Main features of the Mesilla Bolson are coppice sand dunes, wind-blown depressions, maars (low relief volcanic craters), and basalt flows and cinder cones.

The West Potrillo Mountains and Mount Riley WSAs are composed of an extensive basalt field with numerous cinder cones underlain by Quaternary bolson fill and marine sediments that were deposited during the late Paleozoic era and through the Mesozoic era. These Paleozoic sediments are not exposed at the surface.

B. Water

The West Potrillo Mountains and Mount Riley WSAs form a divide for the south-central portion of two surface water drainage basins. To the west is the Mimbres Basin, a noncontributing, closed basin and to the east is the Mesilla Basin which contributes to the larger Rio Grande Basin.

Surface water within the WSAs drains into both river basins through an ephemeral stream system. Generally, these ephemeral streams flatten out below the alluvial fan slopes and become a nonintegrated system of washes and arroyos in the valley floor. Surface flow usually occurs as a result of summer thundershowers.

Significant recharge to the groundwater reservoir occurs in the many washes and arroyos during flood runoff. Groundwater quality is within recommended limits for livestock and wildlife use, as established by the National Academy of Sciences (BLM 1980).

C. Soils

The West Potrillo Mountains and Mount Riley WSAs are characterized by numerous cinder cones, lava flows, and basalt ridges. Four major landforms and soil types occur within the WSAs.

On the large cones and steep slopes on Mount Riley, soils are stony, shallow, and interspersed between areas of rock outcropping. On more level areas around footslopes of the hills and mountains, soils typically are gravelly on the

surface with sandy textures. These soils are shallow to moderately deep and are usually underlain by caliche or lime coated basalt. On the southern and western parts of the WSAs, the soils are a deep, sandy texture, and have been reworked by wind. Coppice dunes around shrubs are common in these areas. Numerous depressional areas are found throughout the WSAs. These areas receive runoff water and are characterized by deep, fine textured soils.

D. Vegetation

1. General

Vegetation and associated range sites within the West Potrillo Mountains and Mount Riley WSAs consist of five major types:

Vegetation Types	Range Sites	Federal Acres
Creosote	Malpais (lava flow)	52,539
Creosote-mixed desert shrub	Gravelly and shallow sands	46,391
Creosote-mixed desert shrub-grass	Hills	14,781
Mesquite	Sandy	36,165
Mixed desert shrub-tobosa	Draws (swales) and bottomland	5,229

Creosote is the dominant vegetation on the malpais (lava flow) areas located in the northeast half of the West Potrillo Mountains WSA. There is a wide diversity of shrubs, annual and perennial forbs, and grasses in the malpais, many occurring in isolated pockets. Other associated shrub species include snakeweed, various cacti, tarbush, mesquite, mariola, spicebush, and zinnia. Grass species include bush muhly, black grama, dropseeds, other gramas, and tobosa.

Creosote, snakeweed, zinnia, mesquite, yucca, various cacti, Mormon tea, tarbush, and mariola are the dominant shrub species in the shallow soil areas (gravels and sands). Many other shrub species are present in small quantities. Grass species include tobosa, black grama, bush muhly, and dropseeds. Pepperweed, a perennial forb, occurs as a dominant species in some areas. Many other annual and perennial forbs are present in varying amounts. These sites are intermixed across both WSAs.

The West Potrillo Mountains, in the center of the WSA, are creosote-mixed desert shrub aspect dominated hills. Other desert shrubs include snakeweed, mariola, fourwing

saltbush, various cacti, and a few juniper trees. Grasses are varied and sparse.

Grass is the dominant vegetation on Mount Riley. Grasses in this area include bush muhly, black grama, tobosa, dropseeds, Hall's panic, and annual grasses. Mixed desert shrubs occur on the side slopes.

Mesquite sandy areas in the WSAs are along the southern boundary near the Mexican border and the east side. Associated shrub species are snakeweed, fourwing saltbush, yucca, broom dalea, Mormon tea, acacia, creosote, and pale wolfberry. Bush muhly is the major grass species with many other grasses occurring in small amounts. Many species of annual and perennial forbs inhabit these areas.

Mesquite, tarbush, snakeweed, and creosote are the dominant species in the deep soils of the draws (swales) and bottomland areas. Tobosa grass dominates in a few swales. Many other shrubs and grasses occur in small amounts.

2. Threatened or Endangered Plant Species

The following species was identified and located in or near the WSAs (NMSHP and USFWS 1982).

Species: Cereus greggii - night blooming cereus

Status: Bureau sensitive species proposed for Federal listing.

Habitat: widespread; does not grow commonly anywhere; needs the microhabitat associated with creosote and bush muhly.

E. Wildlife

1. General

Although the West Potrillo Mountains and Mount Riley WSAs are primarily a low-elevation area, they have eight different habitat sites. Creosote and mesquite sand dunes are the largest two. While neither of these are very valuable wildlife habitats, the combination of all the habitat sites and the size of the WSAs create enough diversity that there are a number of different wildlife species. The total area is significant for wildlife.

One significant feature of the area is Indian Basin, a natural depression at the southwest end of the West Potrillo Mountains WSA. During the rainy season, the basin floods and many ducks can be found on the temporary pond. There are a number of other dirt tanks in the WSA; waterfowl can be expected on any of them when they hold water.



Looking north into the West Potrillo Mountains WSA.



Mount Riley WSA.

Wintering raptors are found in high numbers in the WSAs. This may be attributed to the high mammal prey base in creosote and mesquite sites (BLM 1981).

Some raptors also nest within the WSAs. Burrowing owls are fairly common in the mesquite sand dune site. Golden eagles and great horned owls nest in the cinder cones of the West Potrillo Mountains. Swainson's hawks nest in soaptree yuccas, a common plant species in some parts of the WSAs (BLM 1979).

Mule deer are found in low numbers within the WSAs. The New Mexico Department of Game and Fish has designated the West Potrillo Mountains as a herd unit area. They estimate that there are now less than half a deer per section, and the optimum number of deer for the area is half a deer per section.

2. Threatened or Endangered Animal Species

There are no known threatened or endangered animal species which are regularly found in the WSAs. There are several records of peregrine falcons being seen in or near the West Potrillo Mountains WSA in the winter, but there is no reason to think they depend on the WSA as crucial habitat. The Swainson's hawk is presently under review by the U.S. Fish and Wildlife Service for listing as a threatened or endangered species.

F. Visual

Four scenic quality rating units (SQRUs) describe the West Potrillo Mountains and Mount Riley WSAs. The Mount Riley, West Potrillo Mountains, and Indian Basin SQRUs described below all have Class B (moderate) ratings.

Mount Riley is only one of three massive dome-like landforms within this rating unit that abruptly rise above the desert floor. Colors are dull brown and dark gray with some reddish tones. The dark green and light brown vegetation is scattered and random with some concentrations in the radial drainage ways.

The West Potrillo Mountains SQRU consists of a chain of moderately steep cone shaped and horseshoe shaped (herraduras) volcanic landforms. Landform color is principally dark brown to black with some reddish tones. The vegetation on the lower slopes appears marbled with areas of light and dark green while upper slopes appear more uniformly dark green.

The Indian Basin SQRU describes the southwest part of the West Potrillo Mountains WSA. The sand dunes forming the rim of the Basin are primarily light tan mottled with dark green and gray-green vegetation. From a distance, the basin depression

appears uniformly covered with grasses which vary in color from bright greenish yellow to light green, depending on the season.

The fourth SQRU describing the WSAs surrounds the three SQRUs described above. This rating unit consists of flat to gently rolling desert with a Class C rating. The green, tan, and gray colors of creosote, mesquite, yucca, and grasses offer some contrast with the light browns, tans, and orange-browns of the flats and rolling sand dunes.

The West Potrillo Mountains and Mount Riley WSAs fall into a Visual Resource Management (VRM) Class IV.

G. Cultural

There are four known sites in the West Potrillo Mountains and Mount Riley WSAs, although there have been no surveys in the areas. One site is a Classic Mimbres pueblo that has been bulldozed; however, some undisturbed material may still remain. This site has the highest concentration of bird bones of any known Mimbres site. There are several undisturbed El Paso phase structures near the middle of the West Potrillo Mountains WSA and one El Paso phase hamlet near the southeast boundary of the WSA. The most concentrated and significant cultural resources are in the southwestern portion of the WSAs. They provide information regarding settlement in a very marginal area.

H. Air

Generally, the quality of air within the West Potrillo Mountains and Mount Riley WSAs is good. The air quality in the WSAs does not exceed the state or Federal air quality standards and is classified as a Class II area. This classification allows a moderate amount of degradation of air quality.

Since no major industrial or population centers are located in the nearby vicinity, the only major degradation of air quality occurs during the spring months (March-May) when west-prevailing winds, commonly gusting in excess of 30 mph, result in dust storms throughout the southern part of the state.

III. EXISTING AND POTENTIAL USES

A. Mineral Development

1. Energy Minerals

There are no known occurrences of energy minerals in the WSAs. The Minerals Management Service has classified about half of the West Potrillo Mountains as prospectively valuable for oil and gas. The center of the WSA near the chain of cinder cones and Mount Riley is not considered prospectively valuable for oil and gas. The eastern edge of the WSA within Range 2 West is considered prospectively valuable for geothermal resources. There are 3 Federal geothermal leases, 26 geothermal lease applications, and 39 oil and gas lease applications within the West Potrillo Mountains and Mount Riley WSAs.

The best potential for petroleum occurs along the west side pediment and in the valley between the West Potrillo Mountains and the Aden Lava Flow. Much exploration has been done adjacent to the WSAs to better define the possibilities for oil and gas, but little exploration has actually occurred in the volcanics. Tertiary and Quaternary volcanics usually indicate that an area has poor oil and gas potential. The best potential is probably at depth and is related to the Pedregosa Basin or the Overthrust Belt. Although several test wells have been drilled, results provided little additional information on the oil and gas potential of the West Potrillo Mountains and Mount Riley.

Numerous shallow temperature gradient holes have been drilled and tested near the West Potrillo Mountains in the vicinity of the Kilbourne Hole Known Geothermal Resource Area (KGRA) east of the WSA. However, limited access and environmental restrictions have prevented exploration in the West Potrillo Mountains. A low temperature geothermal resource does exist in the Kilbourne Hole vicinity. Recent communication with industry (Hunt Energy 1982) indicates that temperature gradients decrease toward the west from Kilbourne Hole. Lack of industry interest and decreasing temperature gradients indicate a low to moderate geothermal potential in the West Potrillo Mountains.

Currently, a portion of the West Potrillo Mountains WSA, called the West Potrillo Primitive Area, is Not Open to Leasing (NOL). Planning documents recommend that the area be opened to energy minerals leasing with a protective stipulation for primitive values (BLM 1983).

2. Non-Energy Minerals

There are no occurrences of locatable minerals known to exist within the WSAs and potential is poor. There are two types of saleable mineral materials in the WSAs; they are cinders and lava rock.

a. Cinders

Volcanic cinders are probably the most important mineral material resource in the West Potrillo Mountains WSA. There are large quantities and variations in color and weight. The market for cinders is in lightweight aggregate, barbecue grill heating media, landscaping, roofing chips, and potting material for indoor horticulture. Red cinders occur in the northern one-third of the West Potrillo Mountains WSA. They bring in a higher price and are more desirable to industry because they require little or no processing before being marketed. Due to the remoteness from market and availability of other sources, the red cinders, in all likelihood, would not be mined. The cinders in most of the cinder cones are of commercial quality, specifically for their color. Two cones were extensively mined in the past under the General Mining Law of 1872. There are currently 6 mining claims recorded within the WSAs. All are pre-FLPMA claims which were located for cinders in 1946. Since 1955, cinders have been classified as saleable minerals and are no longer locatable under the mining laws.

b. Lava Rock

Lava rock is used mostly as a decorative stone. The West Potrillo Mountains have some lava rock, but better sources are found in the Aden Lava Flow.

B. Watershed

Water use within the West Potrillo Mountains and Mount Riley WSAs is primarily by livestock and wildlife. There are eight dirt tanks inside the West Potrillo Mountains WSA that utilize surface runoff (see Livestock Grazing). Two small water spreading dikes are also located within the West Potrillo Mountains WSA for erosion control. Additionally, several well facilities and dirt tanks are located just outside the WSAs' boundaries that are for livestock watering.

The West Potrillo Mountains and Mount Riley WSAs are within the Lower Rio Grande declared underground water basin and groundwater use is administered by the New Mexico State Engineer.

C. Livestock Grazing

1. Allotments

Parts of five grazing allotments are present within the West Potrillo Mountains and Mount Riley WSAs. Some areas within the WSAs such as the upper elevations of Mount Riley and the West Potrillo Mountains cinder cones are ungrazed by livestock due to the lack of water, the steep slopes, and the rough and broken terrain in the malpais (lava rock). Licensed grazing use on public land includes cattle and a few horses.

ALLOTMENTS WITHIN THE WSAs^{a/}

Allotment Name and Number	Total Acres	Total AUMs	Acres in WSAs	Percent Allotment
POL 3016	83,114	5,688	27,223	33%
Kilbourne Hole 3023	85,488	5,760	10,596	12%
West Potrillos 3029	94,682	8,446	50,327	53%
Mount Riley 3033	75,360	5,448	45,474	60%
Thousand Springs 3039	52,327	5,508	21,485	41%
TOTAL			155,105	

2. Ranch Management

EXISTING RANGELAND DEVELOPMENTS WITHIN THE WSAs^{a/}

Allotment Name and Number	Type of Development	Location
POL 3016	dirt tank	T. 27 S., R. 4 W., Sec. 26
Kilbourne Hole 3023	interior fence	2½ miles
West Potrillos 3029	dirt tank	T. 27 S., R. 3 W., Sec. 12
	dirt tank	T. 27 S., R. 3 W., Sec. 9
	interior fence	9½ miles
Mount Riley 3033	dirt tank	T. 27 S., R. 3 W., Sec. 8
	water spreaders	T. 28 S., R. 3 W., Secs. 17,34
Thousand Springs 3039	dirt tank	T. 29 S., R. 4 W., Sec. 4
	dirt tank	T. 28 S., R. 5 W., Sec. 24
	dirt tank	T. 28 S., R. 5 W., Sec. 21
	dirt tank	T. 28 S., R. 4 W., Sec. 23

Note: ^{a/}Information shown in tables reflects only Federal acres and animal unit months (AUMs), and rangeland developments on public land.

Boundary Fences:

POL 3016 and West Potrillos 3029	3 3/4 miles
Thousand Springs 3039 and POL 3016	7 1/4 miles
Thousand Springs 3039 and Mount Riley 3033	5 1/2 miles
POL 3016 and Mount Riley 3033	6 3/4 miles
Kilbourne Hole 3023 and West Potrillos 3029	5 miles
Kilbourne Hole 3023 and Mount Riley 3033	3 1/2 miles
Mount Riley 3033 and West Potrillos 3029	4 1/2 miles

3. Potential Rangeland Developments

A 2½ mile pipeline in T. 26 S., R. 4 W., Sections 14, 23, and 25, has been proposed in the West Potrillos allotment (3029). The location of this proposed rangeland development is tentative.

D. Recreation

Recreational activities in the West Potrillo Mountains and Mount Riley WSAs include off-road vehicle (ORV) use, sightseeing, rockhounding, and hunting.

ORV use occurs on vehicle trails throughout the area and along boundary roads often associated with other recreation activities such as those described below. No motorized cross-country travel is allowed in the West Potrillo Mountains WSA. The WSA was designated as limited to designated roads and trails under an emergency ORV closure on June 4, 1982. The purpose of the emergency closure is to prevent damage caused by off-road travel within the WSA and possible impairment of wilderness values.

Zoological sightseeing opportunities are fair in and around Indian Basin, which is an overwintering area for ferruginous, rough-leg, red-tail, and other hawks. Quail, dove, and duck hunting occurs in Indian Basin. Rockhounds look for geodes in the West Potrillo Mountains. They are of volcanic origin and occasionally have crystalline centers.

The 1975 Management Framework Plan (MFP) for the Las Uvas Planning Unit recommended that a study be conducted to determine the value of the central part of the West Potrillo Mountains as a primitive area. The public participation record for the 1975 MFP indicated public support for the study at that time.

Primitive, nonmotorized recreation opportunities are described in Chapter IV, Primitive and Unconfined Recreation.

E. Education/Research

Dr. Reid of the University of Texas at El Paso indicates that R. D. Worthington will start a floristic survey of the West

Potrillo Mountains and Mount Riley area to determine what plants are present, how they are disturbed, and what environmental factors influence them. Dr. Paul Minnis has expressed interest in working on a Mimbres site in Indian Basin in the near future.

F. Realty Actions

The Southern Pacific Railroad right-of-way forms the major portion of the southern boundary of the West Potrillo Mountains WSA. The railroad tracks have been removed and parts of the old railroad grade combine with existing dirt roads to provide access to mining claims and rangeland developments. There have been proposals for the New Mexico State Highway Department to upgrade and pave this access road, however, no plans have as yet been finalized.

G. Vegetative Products

An area of approximately 23,040 acres in the vicinity of Indian Basin in the southwest part of the West Potrillo Mountains WSA has been identified as a potential vegetative collection and sale area for yucca, ocotillo, cacti, sotol base, yucca stalks, fourwing saltbush seed, and mesquite (BLM 1981).

IV. WILDERNESS CRITERIA

A. Evaluation of Wilderness Values

1. Quality of Mandatory Wilderness Characteristics

a. Naturalness

The West Potrillo Mountains and Mount Riley WSAs generally appear natural. Human imprints affecting the naturalness of the West Potrillo Mountains WSA include dirt tanks, vehicle trails, fences, cherry-stemmed roads, and cinder mining activities. The Mount Riley WSA is virtually pristine with the exception of 4 miles of fence.

Eight dirt tanks are within the boundary of the West Potrillo Mountains WSA. Two-track vehicle trails provide access to seven of the dirt tanks. The remaining tank appears to be accessed by cross-country travel.

A web of 72 miles of vehicle trails cover the West Potrillo Mountains WSA. All of these are two-track with vegetation growing in the center. The trails are generally unnoticeable unless standing directly on or walking along the trails. The trails provide access within allotments, to other allotments, and to rangeland developments.

Forty-eight miles of fence crisscross the WSAs. All have wooden posts and blend in well with the landscape. Vehicle trails run along approximately 20 miles of the fence.

Twelve roads are cherry-stemmed into the West Potrillo Mountains WSA. The two longest cherry-stems penetrate 4 miles into the WSA. Most of the remaining roads penetrate 2 miles or less into the area. Three of these roads enter the WSA from the south, six from the east, and three from the west boundary. These roads provide access to livestock watering facilities and cinder mining activities.

Cinder mining impacts are found in the southern part of the West Potrillo Mountains WSA (See Map 1 for general locations of cinder claims). The cinder mine at Guzman's Lookout Mountain furnished the cinders for the old Southern Pacific railroad bed (now the Columbus-Anapra road) that forms most of the southern boundary of the WSA. The south and southwest slopes of the mountain are heavily impacted. There is no ongoing activity at this site.

Currently, cinder mining is taking place on one of six placer claims $2\frac{1}{2}$ miles southeast of Guzman's Lookout Mountain. These claims were located prior to the passage of the Federal Land Policy and Management Act (FLPMA) on October 21, 1976, and operations are proceeding in the same manner and degree as on that date. A new cut (pit) on the northeast slope of a cinder cone was excavated in August of 1981. The mine is screened topographically because of its location and proximity to other cinder cones in the vicinity. In addition, the subtle color contrast between the surface and subsurface material renders the mine virtually invisible from a distance at this stage in the operations.

Three geophysical exploration lines (vibroseis lines) were completed in the northwest and northeast parts of the West Potrillo Mountains WSA in March and April of 1982. The line in the northwest part of the WSA is approximately 5 miles long. The lines in the northeast part of the WSA are approximately 3 and 8 miles long. Reclamation work was done on the lines and their condition is being monitored by the BLM. The lines are expected to be substantially unnoticeable by the time the Secretary of the Interior is scheduled to present wilderness suitability recommendations to the President as required by the nonimpairment criteria in the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979).

Several factors mitigate the impacts of the imprints described above. First of all, most of the imprints in the West Potrillo Mountains WSA are associated with livestock grazing and their impacts on naturalness are not severe.

Secondly, the vast size of the West Potrillo Mountains WSA in combination with the topographic variation serve to dilute the effects of the imprints. The WSA is, on the average, 12 miles wide (east-west axis) and 20 miles long (north-south axis). Within this vast area the topography includes playas, sand dunes, and over 48 volcanic cones.

Thirdly, the imprints are distributed throughout the West Potrillo Mountains WSA. For example, the network of vehicle trails roughly divides the WSA into pristine parcels that vary in size from 7,000 acres to 20,000 acres.

The cumulative impacts of human imprints within the West Potrillo Mountains do not greatly affect the quality of overall naturalness in the WSA. Both WSAs

generally appear to have been affected primarily by the forces of nature.

b. Solitude

Both the West Potrillo Mountains and Mount Riley WSAs provide outstanding opportunities for solitude. In the Mount Riley WSA, the three separate peaks and the radial drainage ways down the slopes provide topographic screening of visitors. There is some potential for user concentrations in the larger drainages separating Mount Riley and Mount Cox where climbing is less difficult.

Due to the vast size, blocked-up boundary configuration, and varied topography of the West Potrillo Mountains WSA, opportunities to avoid the sights and sounds of others are found throughout the area. Access points into the WSA are numerous and dispersed. This further enhances opportunities for solitude. The quality of solitude opportunities in the West Potrillo Mountains is a major factor in the overall value of the area for wilderness.

c. Primitive and Unconfined Recreation

Outstanding opportunities for primitive recreation in the West Potrillo Mountains WSA include hiking, backpacking, hunting, and geological sightseeing. The large size and blocked-up configuration of the WSA make a 3-4 day backpack through the area possible. The lack of water and rough and rubbly volcanic surfaces make backpacking and hiking somewhat challenging. The variety of volcanic formations (cinder cones with craters, herraduras, and spatter cones) add geologic interest. The solitude of the area contributes favorably to primitive recreation experiences.

Climbing opportunities exist in the Mount Riley WSA. Although challenging, these opportunities are not considered outstanding.

2. Special Features

The West Potrillo Mountains and Mount Riley WSAs contain special ecological and cultural features of scientific and educational value.

The ecological features include both vegetation and wildlife values. The WSAs provide habitat for the night blooming cereus, a Bureau sensitive plant species proposed for Federal listing (see Chapter II, Vegetation). The WSAs are significant for wildlife because of the number of

wildlife habitat sites within the areas and the large size of the WSAs (see Chapter II, Wildlife).

The cultural features of the WSAs include Classic Mimbres and El Paso phase sites which would provide information regarding settlement in a marginal area. (See Chapter II, Cultural.)

Future projects of scientific and educational value planned in this area include a floristic survey of the West Potrillo Mountains and Mount Riley and a study of a cultural site in Indian Basin (see Chapter III, Education/Research).

3. Multiple Resource Benefits

Congressional designation of this area as wilderness would provide a greater degree of long-term protection for the area's wilderness values than would administrative designations available to the BLM.

A more detailed discussion of the multiple resource benefits of wilderness designation is located in Chapter VI, Impacts, under the All Wilderness Alternative.

4. Diversity

a. Ecosystems Present

The Bailey (1976) - Kuchler (1966) System classifies the West Potrillo Mountains and Mount Riley WSAs as being in the Chihuahuan Desert Province with a potential natural vegetation of grama-tobosa shrubsteppe.

The general nature of the Bailey-Kuchler System fails to show the vegetative variety and diversity of the WSAs. Further refinement of the system shows the following vegetation types in the WSAs:

Vegetation Types	Acres
creosote	52,539
Trans-Pecos shrub savanna	61,172
mesquite-acacia savanna	36,165
grama-tobosa shrubsteppe	5,229

b. Distance from Population Centers

The West Potrillo Mountains and Mount Riley WSAs are approximately 1 hour driving time from El Paso, Texas;

1 hour from Las Cruces, New Mexico; 5 hours from Albuquerque, New Mexico; 6 hours from Tucson, Arizona; and 8 hours from Phoenix, Arizona.

B. Manageability

Several factors affect the ability of the West Potrillo Mountains and Mount Riley WSAs to be managed as wilderness in the long-term: state land, a private subsurface mineral estate inholding, grandfathered mining activities, ORV use, and the size and shape of the WSAs.

State land inholdings total 12,051 acres in the West Potrillo Mountains WSA. Three parcels of private subsurface mineral estate totaling 1,440 acres are cherry-stemmed in the West Potrillo Mountains WSA. A 640-acre inholding of private subsurface mineral estate is located in the Mount Riley WSA. Nonwilderness or incompatible uses on the state land or exploitation of the private subsurface mineral estate could impact the wilderness values of the West Potrillo Mountains and Mount Riley.

At the present time, there are no special uses on the state sections except grazing leases. Although all of the state acreage is leased for oil and gas, very few of the state parcels and one of the private subsurface mineral estate parcels are located in the valley between the West Potrillo Mountains and the Aden Lava Flow, where there may be potential for oil and gas accumulations. The cherry-stemmed parcels of private subsurface mineral estate in the West Potrillo Mountains WSA are not in close proximity and all have existing access. Since the West Potrillo Mountains WSA is so large, the impacts of nonwilderness uses would not have major impacts on the wilderness values or manageability of this WSA. Although Mount Riley is not large enough to absorb the impacts of nonwilderness uses on the private subsurface mineral estate inholding, locatable mineral potential is poor and the best potential for oil and gas is north of Mount Riley.

Parts of three geothermal leases overlap portions of the east boundaries of the West Potrillo Mountains and Mount Riley WSAs. These leases were let before the Federal Land Policy and Management Act (FLPMA), which mandated the wilderness review, became law on October 21, 1976, and are referred to as "pre-FLPMA" leases. One of these leases has a No Surface Occupancy (NSO) stipulation. The other two leases have no stipulations. Pre-FLPMA leases have valid existing rights and may be fully explored and developed even if such activities would impair wilderness values. However, since the geothermal potential in this area is considered low to moderate and development seems unlikely in the foreseeable future, these leases do not represent a major manageability concern.

Mining operations are proceeding on the six grandfathered cinder claims (Chaparral Numbers 1-6) in the southern part of the West Potrillo Mountains WSA. Under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP) (BLM 1979), mining claimants are recognized as having a valid existing right if a valid discovery had been made on the claim before the passage of FLPMA on October 21, 1976. If the claimant can show evidence of his discovery to the BLM, activities for the use and development of the claims will be exempt from the nonimpairment criteria of the IMP. Mining operations on such claims would be regulated only to prevent unnecessary or undue degradation of the WSA. Therefore, there is a good possibility that the wilderness values in the vicinity of these claims could be degraded before the area is designated wilderness if the above criteria are met.

Once an area is designated wilderness, the provisions of the Wilderness Management Policy (WMP) (BLM 1981) apply. Under the WMP, holders of mining claims validly established in the area prior to its designation as wilderness may develop their claims in accordance with the 43 CFR 3809 regulations "Surface Management of Public Lands Under U.S. Mining Laws." Although exercise of the rights of mining claimants must be with the least possible impact on the wilderness resource and claimants will be required to prevent unnecessary or undue degradation of the land, mining operations may impair wilderness values if there are no reasonable alternatives. In this case, the wilderness values in the vicinity of these claims could continue to be degraded after the area is designated wilderness. The presence of these mining claims represents a major negative impact on the wilderness manageability of the part of the WSA surrounding these claims.

Another manageability concern is ORV use. There are 72 miles of vehicle trails in the West Potrillo Mountains WSA. Preventing use on these trails after wilderness designation would require signs at a minimum and possibly barriers. If trespass ORV use became a problem, wilderness values such as naturalness and solitude would suffer.

The size, shape, and topographic variety of the WSAs, however, enhance the manageability of the WSAs. As visitor use increases, these areas would be able to absorb the additional visitation without negative effects on wilderness values.

V. PUBLIC INVOLVEMENT OVERVIEW

Personal letters, form letters, and petitions were received on the West Potrillo Mountains and Mount Riley WSAs during the public comment periods on the New Mexico Wilderness Review Initial Inventory Decisions (BLM 1979) and the New Mexico Wilderness Study Area Proposals (BLM 1980). The WSA proposal for these areas was among the ten most commented upon recommendations in the state. Additional data submitted with public comments included maps and legal descriptions of developments.

Approximately 43 percent of the personal letters supported further wilderness review of the West Potrillo Mountains and Mount Riley. Supporting comments cited naturalness, outstanding opportunities for solitude and recreation, and geological supplemental values as justification. The area's large size, diverse topography, proximity to large population centers, and dispersed access points were listed as contributing factors to outstanding opportunities.

Approximately 57 percent of the personal letters opposed wilderness review of these two areas. About half of the opposing comments listed resource conflicts such as aggregate minerals, oil and gas potential, geothermal energy potential, and grazing. There was also concern that wilderness designation would "hinder, in the future, the use of the large water basin in these areas by the City of Las Cruces and Dona Ana County and prevent access to the elderly and the handicapped." Other comments listed roads, rangeland developments, and vehicle trails as impacts on naturalness and described opportunities for solitude as less than outstanding due to the outside sights and sounds of the Southern Pacific Railroad, Interstate 10, and the low level crossings of military aircraft.

VI. ALTERNATIVES AND IMPACTS

None of the alternatives would have significant impacts on air, education/research, and realty actions in the West Potrillo Mountains and Mount Riley WSAs. For this reason, these resources were not included in the following discussions.

A. All Wilderness

Under this alternative, the entire 155,105 acres of public land within the West Potrillo Mountains and Mount Riley WSAs would be recommended as suitable for wilderness designation. (See Map 7 for WSA boundary.)

If designated as wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (WMP) (BLM 1981) as follows.

Generally, motorized access on vehicle trails within the WSAs would not be allowed. However, permits for vehicular access to maintain existing rangeland developments in the WSAs could be authorized under the WMP.

The WSAs would be managed as a VRM Class I.

Since the geothermal resources of the area do not appear economically exploitable, geothermal development in the WSAs is not assumed under this alternative.

The six grandfathered cinder claims (Chaparral 1-6) in the south-central part of the West Potrillo Mountains could be fully developed in the long-term (see Map 7 for general locations of the cinder claims).

The proposed 2½ miles of pipeline on the West Potrillo allotment (3029) could be constructed.

1. Impacts to Minerals

There has been no energy minerals production in the West Potrillo Mountains WSA. Because oil and gas potential appears to be limited to the valley between the West Potrillo Mountains and Aden Lava Flow and geothermal resources are not considered economically exploitable, the impacts to the energy minerals industry would be minor in the short-term. The economic benefits forgone to the energy minerals industry would also be minor in the short-term.

Exploration and new leasing for energy minerals would not be allowed under the mineral leasing laws after wilderness designation. As a result, there would be no opportunity for further assessment of the energy minerals potential in the WSAs, or for development and production. The energy

minerals industry could be adversely affected in the long-term.

Locatables are nonexistent within the WSAs. There would be no impacts to locatables upon designation. The only current production of minerals within the WSAs is cinders. Extraction of cinders within the WSAs could continue under the WMP on the cinder claims near the southern end of the West Potrillo Mountains WSA. The claims were located prior to the passage of Public Law 167 (July 23, 1955).

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

Restrictions on surface disturbing and mechanized activities would provide long-term protection for most of the existing water, soils, and vegetation in these WSAs, including Cereus greggii, a Bureau sensitive plant species proposed for Federal listing.

The installation of the proposed 2½ miles of pipeline on the West Potrillos allotment (3029) would result in short-term impacts due to the removal of vegetation and soil disturbance. These impacts would be insignificant in the long-term once vegetation is reestablished along the pipeline. The proposed trough would be constructed on state land. The additional source of livestock water provided by this pipeline could result in redistribution of existing livestock use for better overall utilization of the vegetative resource on the West Potrillos allotment.

A significant loss of vegetation and soil would result from excavation of cinders on the Chaparral claims (1-6) in the south-central part of the West Potrillo Mountains WSA.

b. Wildlife

Limiting off-road vehicle (ORV) use would protect wildlife habitat from destruction and the animals from disturbance. The excavation of cinders on the Chaparral claims (1-6) in the southern part of the West Potrillo Mountains would degrade wildlife habitat and displace animals in the immediate vicinity.

c. Visual

The majority of the existing visual resources would be protected. The area would be managed as a VRM Class I, which permits minor modifications in the basic elements of the landscape as a result of natural

ecological changes and very limited management activity.

Visual resources in the southern part of the West Potrillo Mountains WSA in the area of the six cinder claims would be significantly degraded in the long-term.

d. Cultural

Access to the area would be limited to foot and horseback travel. This would decrease cultural site vandalism by individuals gaining access to the area with motorized vehicles.

e. Livestock Grazing

Permits for vehicular access could be authorized under the WMP for maintenance of the 1 dirt tank on POL (3016), 2 dirt tanks and 3½ miles of interior fence on the West Potrillos (3029), a dirt tank on Mount Riley (3033) and 4 dirt tanks on Thousand Springs (3039). Boundary fences requiring a permit for motorized access are: 4 miles between Thousand Springs (3039) and Mount Riley (3033), 3 miles between POL (3016) and Mount Riley (3033), and ¼ mile between Mount Riley (3033) and the West Potrillos (3029).

Vehicular access would be restricted on the 72 miles of vehicle trails throughout the West Potrillo Mountains WSA. Use of motorized vehicles on the existing vehicle trails to check cattle would not be permitted. Checking cattle on foot or horseback could have an impact on livestock management and costs.

The proposed 2½ miles of pipeline on the West Potrillos allotment (3029) could be built using motorized equipment. No access road would be maintained. Vehicular access for maintenance purposes would be on a permit basis. The trough would be on state land.

f. Recreation

Present motorized recreation use patterns would be impacted. ORV enthusiasts and hunters would not be permitted motorized access on the 72 miles of existing vehicle trails in the West Potrillo Mountains area.

g. Vegetative Products

An area of approximately 23,040 acres in the southwest part of the West Potrillo Mountains WSA would not be

made available as a vegetative collection and sale area in the long-term.

h. Wilderness Values

Wilderness designation would provide the wilderness values present in the area with long-term Congressional protection. Most of the West Potrillo Mountains and Mount Riley WSAs could be managed to maintain their natural appearance, opportunities for solitude and primitive recreation, and special features in the long-term.

Cinder mining operations on the six grandfathered claims (Chaparral Numbers 1-6) in the West Potrillo Mountains would degrade natural values, opportunities for solitude and primitive recreation, and special features in the long-term. The mining operations on these claims would significantly impact the manageability of the south-central part of the WSA in the long-term.

Other manageability considerations could impact the capability of the West Potrillo Mountains and Mount Riley WSAs to be managed as wilderness in the long-term. Nonwilderness uses on the state land inholdings or the private subsurface mineral estate parcels in or near the WSAs could degrade wilderness values. The impacts on wilderness values could be minimal to major depending on the location, type, and extent of development and access requirements.

B. Amended Boundary

Under the Amended Boundary Alternative, 147,100 acres of public land within the West Potrillo Mountains and Mount Riley WSAs would be recommended suitable for wilderness designation (see Map 7 for amended WSA boundary).

If the area within the amended boundary is designated wilderness, existing and potential uses (see Chapter III) would be regulated by the Wilderness Management Policy (BLM 1981) as described under the All Wilderness Alternative, with the following exceptions.

The amended boundary would exclude 8,005 acres of public land in the southern part of the West Potrillo Mountains WSA. This boundary adjustment would exclude the six grandfathered cinder claims (Chaparral Numbers 1-6) from the area recommended suitable for wilderness.

The impacts to minerals, water, soil, vegetation, wildlife, visual, livestock grazing, recreation, and vegetative products

would be the same as those described under the All Wilderness Alternative.

1. Impacts to Cultural

One El Paso phase hamlet would be excluded from the wilderness area. By excluding the site, it would be subject to increased visitation by motorized vehicles, with an increased chance of vandalism. The two small El Paso phase hamlets west of Mount Riley and the Classic Mimbres Pueblo would be in the area recommended suitable for wilderness and would be provided additional protection as a result of restricted vehicular access.

2. Impacts to Wilderness Values

The wilderness values and special features within the amended boundary would be provided with long-term Congressional protection.

The exclusion of the grandfathered cinder mining claims from the area recommended suitable would significantly enhance the manageability of the West Potrillo Mountains WSA as wilderness in the long-term.

Nonwilderness uses on the state land inholdings or the private subsurface mineral estate parcels in or near the WSAs could impact wilderness values in the long-term. However, at the present time, it appears that all of the area within the amended boundary could be managed as wilderness in the long-term.

C. No Action/No Wilderness

Under the No Action/No Wilderness Alternative, the West Potrillo Mountains and Mount Riley WSAs would be recommended nonsuitable for wilderness designation.

If the WSA is not designated wilderness, existing and potential uses (see Chapter III) would continue without regard to the Interim Management Policy and Guidelines for Lands Under Wilderness Review (BLM 1979) as follows.

Vehicle use within the WSAs would be restricted to existing roads and trails. No cross-country vehicle use would be allowed.

Both the West Potrillo Mountains and Mount Riley WSAs would be managed as a VRM Class IV.

Oil and gas exploration could occur in the West Potrillo Mountains. Approximately 80,600 acres in the central part of the West Potrillo Mountains would be leased for energy

minerals with a special stipulation to protect primitive values.

The six grandfathered cinder claims (Chaparral Numbers 1-6) in the south-central part of the West Potrillo Mountains could be fully developed (see Map 7 for general locations of the cinder claims).

The southwest part of the West Potrillo Mountains WSA could be opened for vegetative collection and sales.

The proposed 2½ miles of pipeline on the West Potrillo allotment (3029) could be implemented.

1. Impacts to Wilderness Values

The wilderness values and special features of the West Potrillo Mountains and Mount Riley WSAs would not be protected through Congressional designation. Management of the WSAs as specified in land use plans would be subject to administrative change in the long-term.

Oil and gas exploration in the West Potrillo Mountains WSA would irrevocably degrade the wilderness values.

The impacts of the grandfathered cinder claims on wilderness would be the same as those described under the All Wilderness Alternative.

Continued ORV access on existing vehicle trails within the WSAs or on new access constructed in conjunction with oil and gas exploration would periodically disrupt solitude in the vicinities of the vehicle trails.

2. Impacts to Other Resources and Uses

a. Water, Soils, Vegetation

There would be a significant loss of vegetation and topsoil as a result of exploration for oil and gas and cinder claim development. ORV use on the existing vehicle trails throughout the area would contribute to vegetation loss. The proposed pipeline would be constructed. Impacts as a result of the installation of the proposed pipeline would be the same as those described under the All Wilderness Alternative. The habitat of Cereus greggii, a Bureau sensitive plant species proposed for Federal listing, could be impacted through these surface disturbing activities (see Chapter II, Vegetation).

A small increase in sediment load could result from increased cinder mining operations and continued ORV use. Increased sediment would be of minor

significance because of the shallow, indefinite drainage pattern.

b. Wildlife

There would be a slight impact to wildlife under this alternative. Development of cinder claims and oil and gas development would degrade wildlife habitat and disturb animals in the vicinity. ORV use also impacts wildlife. If human presence increases, poaching could also increase.

c. Visual

Both the West Potrillo Mountains and Mount Riley WSAs would be managed as a VRM Class IV, which permits significant change in the basic elements of the landscape as a result of management actions.

The existing Class B scenic quality of the West Potrillo cinder cones in the central part of the WSAs would probably be maintained in the short-term since existing and proposed BLM plans do not identify any activities which would impair visual resources in this part of the WSA. In the long-term, extraction of cinders could significantly degrade visual resources in the south-central (cinder claims) part of the West Potrillo Mountains WSA under a VRM Class IV. Oil and gas exploration could degrade visual resources in the long-term.

d. Cultural

The chances of damage to cultural resources would increase through construction of future rangeland developments and increased access.

e. Minerals

Leasing would continue. Energy minerals activities in an area of 80,600 acres in the central part of the West Potrillo Mountains would comply with the constraints of the protective stipulation for primitive values. Compliance with the stipulation could result in limitations on types of exploration, no surface occupancy areas, or restrictions on types and locations of access. Such restrictions could result in additional operating costs for the energy minerals industry.

f. Livestock Grazing

All rangeland developments could be checked and maintained on a convenience basis using motorized

equipment. No impacts to livestock grazing would occur under this alternative.

g. Recreation

Motorized recreation uses, primarily ORV use, and hunting could benefit from the improved access and proliferation of access associated with oil and gas exploration. However, hunting opportunities could be degraded as a result of the impacts of exploration on wildlife.

h. Vegetative Products

Vegetative removal and disturbance as a result of oil and gas exploration in and around Indian Basin could impact the value of the area as a vegetative products collection and sale area.

VII. RECOMMENDED ACTION

A. Recommended Action Description

The recommended action for the West Potrillo Mountains and Mount Riley WSAs is the Amended Boundary Alternative. A total of 147,100 acres would be recommended suitable for wilderness designation and 8,005 acres would be recommended unsuitable for wilderness designation.

Approximately 15,603 acres of state land and 1,440 acres of private mineral estate within and adjacent to the WSAs should have a high priority for acquisition if the areas are designated wilderness.

B. Rationale

The total acreage recommended suitable for wilderness designation under the Amended Boundary Alternative has high quality wilderness values. In addition, the Amended Boundary Alternative minimizes manageability problems.

Both the West Potrillo Mountains and Mount Riley WSAs generally appear natural. The vast size of the West Potrillo Mountains WSA mitigates the impacts of grazing developments and cinder mining activities in the area. The Mount Riley WSA is virtually pristine. Both areas provide outstanding opportunities for solitude. The vast size, blocked-up boundary configuration, dispersed access points, and varied topography of the West Potrillo Mountains WSA supports especially exceptional opportunities for solitude. The quality of solitude opportunities in the West Potrillo Mountains is a major factor in the overall value of the area for wilderness. Outstanding opportunities for primitive recreation in the West Potrillo Mountains WSA include hiking, backpacking, hunting, and geological sightseeing.

The Amended Boundary Alternative excludes the six grandfathered cinder claims in the southern part of the West Potrillo Mountains WSA. This boundary adjustment eliminates potential wilderness manageability conflicts.

The extensive state inholdings in the West Potrillo Mountains WSA present a potential wilderness management problem. The acquisition of these inholdings would enhance the manageability of the area as wilderness in the long-term. Management of the acquired land as wilderness would eliminate the potential impacts on wilderness values of nonwilderness uses on the state sections and the potential impacts of granting access across the WSA to state inholdings.

C. Consistency With Other Plans

The recommended action conflicts with the Southern Rio Grande Planning Area MFP (BLM 1981) decision for vegetative products. The MFP identifies the southwest part of the West Potrillo Mountains WSA as a potential vegetative collection and sale area. Vegetative collection and sales would be prohibited under the recommended action. The recommended action does not conflict with other decisions in the Southern Rio Grande Planning Area MFP.

At this time, there are no known inconsistencies between the recommended action and the policies of local, state, or Federal plans. Continuing coordination and consultation with other agencies will take place during the public comment period on the Draft Supplemental Environmental Assessment for Wilderness Study Areas in New Mexico.

GLOSSARY

ADIT. A nearly horizontal entrance to a mine.

AGGREGATE. A mineral material such as sand, gravel, shells, or broken stone.

ALLOTMENT. An area of land designated and managed for grazing of livestock.

ALLOTMENT MANAGEMENT PLAN (AMP). A documented program which applies to rangeland operations on public land, which is prepared in consultation with the permittee(s) or lessee(s) involved, and which: (1) prescribes the manner in and extent to which livestock operations will be conducted in order to meet the multiple-use, sustained-yield, economic, and other needs and objectives as determined for public land through land use planning; (2) describes the type, location, ownership, and general specifications for the rangeland developments to be installed and maintained on public land to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock grazing and other objectives as may be prescribed by the authorized officer consistent with applicable law.

ALLUVIAL. Pertaining to alluvium; deposited by a stream or running water.

ALLUVIAL CONE. An alluvial fan with steep slopes.

ALLUVIUM. A general term for clay, silt, sand, gravel, or similar unconsolidated sediments deposited by a stream or other body of running water.

ANDESITE. A volcanic rock composed essentially of andesine and one or more mafic constituents. The mafic constituents may be pyroxene, hornblende, or biotite.

ANIMAL-UNIT MONTH (AUM). The amount of forage consumed by one mature cow (1,000 lb.) or its equivalent for one month.

ANTICLINE. An upfold of stratified rock in which the beds bend downward in opposite directions from the crest.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public land where special management attention is needed to protect and prevent irreparable damage to important historical, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards.

ARKOSE. A sandstone containing 25 percent or more of feldspars, usually derived from silicic igneous rocks.

ASPECT SPECIES. A vegetative species that appears to be dominant in the landscape, although it may be only a small percent of the total vegetative composition.

AVIFAUNA. All birds of a given region.

BASALT. A dark to medium-dark colored commonly extrusive mafic igneous rock.

BASIN AND RANGE PHYSIOGRAPHIC PROVINCE. A province in the southwestern United States characterized by a series of tilted fault blocks forming longitudinal ridges or mountains and broad intervening basins.

BATHOLITH. A great mass of intruded igneous rock that extends downward to unknown depth.

BOLSONS. A flat-floored desert valley that drains to a playa.

BUREAU SENSITIVE. Fish, wildlife, and plants which are candidates for Federal listing or species proposed for Federal listing automatically become Bureau Sensitive species.

CALDERA. A large basin-shaped volcanic depression the diameter of which is much greater than the vent.

CARBONACEOUS. 1. Coaly. 2. Pertaining to, or composed largely of, carbon. 3. The carbonaceous sediments include original organic tissues and subsequently produced derivatives of which the composition is chemically organized.

CAULDRON. An inclusive term for all volcanic subsidence structures regardless of shape or size.

CHERRY-STEMMED. An unofficial term used to describe the way an inventory unit boundary is drawn to exclude a road that enters the unit; the resulting boundary resembles a cherry-stem.

CLOSED BASIN. A basin is considered closed with respect to surface flow if its topography prevents the occurrence of visible outflow. It is closed hydrologically if neither surface nor underground outflow can occur.

CONFORMABLE. 1. Strata or groups of strata lying one above another in parallel order are said to be conformable. 2. When beds or strata lie upon one another in unbroken and parallel order, and this arrangement shows that no disturbance or denudation has taken place at the locality while their deposition was going on, they are said to be conformable.

CONGLOMERATES. Clastic sedimentary rock composed of rounded fragments varying from small pebbles to large boulders in a cement of calcareous material such as iron oxide, silica, or hardened clay.

CONTIGUOUS LANDS. As it pertains to Wilderness, lands or legal subdivisions having a common boundary. Lands having only a common corner are not contiguous.

COPPICE DUNES. Sand dunes stabilized around shrubs.

CRITICAL MINERALS. Those minerals that are critical to the economy and security of the United States and for which we are now dependent on foreign sources. These minerals are listed in the National Defense Stockpile Inventory of Strategic and Critical Materials.

CUESTAS. A hill or ridge with a steep face on one side and a gentle slope on the other.

DEFORMATION. Any change in the original form or volume of rock masses produced by tectonic forces; folding, faulting, and solid flow are common modes of deformation.

DIKE. A tabular body of igneous rock that cuts across the structure of adjacent rocks or cuts massive rocks.

DIRT TANK. Usually a permanent earthen structure for holding water temporarily. These are built in high rainfall runoff areas such as an arroyo, canyon, or swale area.

DRAINAGE BASIN. A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded water.

ECOSYSTEM. An ecological community considered together with the nonliving factors of its environment as a unit.

ECOTONE. A transition area between plant communities which has some of the characteristics of each.

EMBAYMENT. Term describing a continental border area that has sagged concurrently with deposition so that an unusually thick section of sediment results. An embayment is similar to a basin of sedimentation of a geosyncline, and some embayments may be one flank of a larger subsiding feature.

ENDANGERED SPECIES.

Federally listed - Any species of animal or plant in danger of extinction throughout all or a significant portion of its range.

State (Group I) - Species whose prospect of survival or recruitment in the state are in jeopardy in the foreseeable future.

State (Group II) - Species whose prospect of survival or recruitment within the state may become jeopardized in the foreseeable future.

EPHEMERAL STREAMS. A stream or portion of a stream which flows only in direct response to precipitation. Such flow is usually of short duration.

EROSION CONTROL STRUCTURES. Usually one large earthen, rock, wire, cement, etc. structure used to hold large concentrated flows of water and release this water in small non-eroding amounts.

EXTENSION AREA. A test range in excess of that provided by the main White Sands Missile Range (WSMR) required for an indefinite period of time to support future military programs.

EXTRUSIVE ROCK. Rocks derived from magma poured out or ejected at the earth's surface.

FAULT. A fracture in the earth's crust accompanied by a displacement of one side with respect to the other.

FAULT BLOCK. A block of the earth's crust bounded on at least two opposite sides by faults; it may be elevated or depressed relatively to the adjoining region.

FAULT SCARP. The cliff formed by a fault. Most fault scarps have been modified by erosion since the faulting.

FISSURE. 1. An extensive crack, break, or fracture in the rocks. A mere joint or crack persisting only for a few inches or a few feet is not usually termed a fissure by geologists or miners, although in a strict physical sense, it is one. 2. Where there are well-defined boundaries, very slight evidence of ore within such boundaries is sufficient to prove the existence of a lode. Such boundaries constitute the sides of a fissure.

FLPMA. Federal Land Policy and Management Act of 1976, which mandated the BLM Wilderness Review. Often referred to and pronounced "FLIPMA".

FOLD, FLEXURE. A type of fold, in size microscopic to orogenic, in which movement took place normal to the axial line and parallel with the limbs, producing notable shortening.

FORMATION. The primary unit of formal mapping or description. Most formations possess certain distinctive or combinations of distinctive lithic features. Boundaries are not based on time criteria. Formations may be combined into groups or subdivided into members.

GANGUE. The nonvaluable minerals in ore.

GEOPHYSICAL EXPLORATION. The use of geophysical instruments and methods to determine subsurface conditions by analysis of such properties as specific gravity, electrical conductivity, or magnetic susceptibility. This usually has an economic objective, e.g. discovery of fuel or mineral deposits.

GEOOTHERMOMETRY. Measurement and study of the earth's heat, usually measured through shallow temperature gradient holes less than 500 feet.

GRABEN. A block generally long compared to its width that has been down thrown along faults relative to the rocks on either side.

GRANDFATHERED. Section 603(c) of FLPMA directs the BLM to manage lands under wilderness review "so as not to impair the suitability of such areas for preservation as wilderness..." However, Section 603(c) also provides a special exception to the "nonimpairment" criteria. Mining, grazing, and mineral leasing uses existing on the date of approval of FLPMA (October 21, 1976) may continue in the same manner and degree as on that date even if these uses impair wilderness values. Such uses are "grandfathered".

HEAT FLOW. Dissipation of heat coming from within the earth by conduction or radiation at the surface; average about 1.2×10^{-6} cal./cm.²/sec.

HORST. A block of the earth's crust separated by faults from adjacent blocks that have been relatively depressed.

HYDROCARBONS. Any organic compound, gaseous liquid or solid, consisting solely of carbon and hydrogen such as crude oil.

HYDROTHERMAL. Relating to hot water in the formation of minerals by the action of hot solutions rising up through the earth's crust from a cooling magma.

IGNEOUS ROCKS. Rocks formed by solidification of magma.

INHOLDING. Private or state owned land inside the boundary of a wilderness study area but excluded from the wilderness study area.

INITIAL INVENTORY. The first step in the BLM Wilderness Review Process. Inventory units or roadless areas which are obviously unsuitable for wilderness are separated from those which warrant intensive inventory for wilderness characteristics.

INSTANT STUDY AREAS. Section 603 of the Federal Land Policy and Management Act mandated that all primitive or natural areas formally identified prior to November 1, 1975, will be studied for wilderness suitability and recommended to the President by July 1, 1980. There are three such areas in New Mexico.

INTENSIVE INVENTORY. The second major step in the BLM Wilderness Review Process. Roadless areas are carefully inventoried for wilderness characteristics. The result of the intensive inventory is the identification of wilderness study areas.

INTERIOR FENCE. Fences used to divide allotments into pastures or holding areas.

INTRUSION. A feature (landform, vegetation, or structure) which is generally considered out of context because of excessive contrast and disharmony with characteristic landscape.

INTRUSIVE ROCK. A rock that consolidated from magma beneath the surface of the earth.

INVENTORY UNIT. Areas or islands of public land indexed for easy reference at the start of the wilderness inventory. These units may or may not be roadless. A roadless determination requires more detailed field work.

LIFE ZONE. Any series of biogeographic zones into which a continent, region, etc., is divided by latitude and altitude on the basis of the characteristic animal and plant life in a zone.

LITHIC. A stone or rock exhibiting modification by humans. It generally applies to projectile points, scrapers, chips, etc., rather than ground stone.

MAGMA. Naturally occurring mobile rock material, generated within the earth and capable of intrusion and extrusion, from which igneous rocks are thought to have been derived through solidification and related processes.

MAGNETIC PROSPECTING/GRAVITY SURVEYS. A technique of applied geophysics; a survey using a magnetometer or a gravity meter on the ground or from the air to measure variations in magnetic or gravitational intensity.

MALPAIS. Rough country composed of dark basaltic lava.

MANAGEMENT FRAMEWORK PLAN (MFP). A planning decision document that establishes, for a given planning area, land use allocations, coordination guidelines for multiple use, and management objectives to be achieved for each class of land use or protection. A MFP is prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decision making.

METAMORPHIC ROCKS. Rocks formed in the solid state in response to changes of temperature, pressure, and chemical environment.

METAMORPHISM. Process by which consolidated rocks are altered in composition, texture, or internal structure by conditions and forces not resulting simply from burial and the weight of subsequently accumulated overburden.

METAVOLCANICS. Partly metamorphosed volcanic rocks.

MINERALIZATION. The process of converting or being converted into a mineral, as a metal into an oxide, sulfide, etc.

OFF-ROAD VEHICLE (ORV). Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain.

OVERSTORY. The upper canopy(s) of plants.

PALEOENVIRONMENTAL STUDIES. Studies using fossilized pollen and other geological and biological remains to determine past climatic conditions.

PARTHENOGENIC. Unisexual reproduction where offspring are produced from unfertilized eggs.

PEDIMENT. A broad gentle sloping bedrock surface that is situated at the foot of a much steeper mountain slope in an arid or semi-arid region.

PERIPHERAL SPECIES. Species whose normal range is in adjoining states or Mexico and which are at the edge of their range in New Mexico.

PETROGLYPH. A form of rock art manufactured by incising, scratching, or pecking designs into rock surfaces.

PLACER. A place where gold is obtained by washing; an alluvial or glacial deposit, as of sand or gravel, containing particles of gold or other valuable minerals.

PLATFORM. The area of thinner sediments adjoining a geosynclinal wedge of thicker equivalent beds or a basin of thicker equivalent sediments.

PLAYA. The usually dry and nearly level lake plain that occupies the lowest parts of closed depressions.

PLUGS. Volcanic necks consisting of a mass of solidified igneous rock.

PLUTON. In the strictest sense, a body of igneous rock that has formed beneath the surface of the earth by consolidation from magma.

PROVINCE. A large area or region unified in some way and considered as a whole.

PSEUDORIPARIAN AREAS. Intermittent drainages (arroyos) supporting a more varied vegetative composition than the surrounding upland areas.

PSILOMELANE. An ore of manganese.

PUBLIC LAND. Any land and interest in land owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except:

- lands located on the Outer Continental Shelf
- lands held for the benefit of Indians, Aleuts, and Eskimos
- lands in which the United States retains the minerals, but surface is private.

PUMICE. An excessively cellular, glassy lava, generally of the composition of rhyolite.

PYROLUSITE. The principal ore of manganese.

PYROXENE. A group of dark, rock-forming silicate minerals.

RANGE SITE. Is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. A range site is the product of all the environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production (SCS 1976).

RANGELAND DEVELOPMENT. Any facility or structure relating to rangelands which is designed to control patterns of use, provide water, and stabilize soil and water conditions.

RAPTORS. Any predatory bird such as a falcon, hawk, eagle, or owl that has feet with sharp talons or claws adapted for seizing prey and a hooked beak for tearing flesh.

RARE II. The wilderness inventory on lands administered by the Secretary of Agriculture through the United States Forest Service. The acronym stands for Roadless Area Review and Evaluation, and the "II" signifies that it is the second time the Forest Service has inventoried and evaluated the lands it administers.

RED BEDS. Term applied to red sedimentary rocks which usually are sandstones and shales, though in exceptional cases red limestones have been reported.

RHYOLITE. The extrusive equivalent of granite.

RIFT. Commonly refers to an elongated valley formed by tensional forces beneath the earth's crust.

RIGHT-OF-WAY. An easement or permit which authorizes public land to be used for a specified purpose that generally requires a long narrow strip of land; examples are roads, powerlines, pipelines, etc.

RIPARIAN VEGETATION. Vegetation which occurs in or adjacent to essentially perennial drainage ways or their floodplains.

ROAD. For the purposes of the BLM's wilderness inventory, the following definition has been adopted from the legislative history of FLPMA:

"The word 'roadless' refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road."

To clarify this definition, the following subdefinitions also apply:

"Improved and maintained" - Actions taken physically by man to keep a road open to vehicular traffic. "Improved" does not necessarily mean formal construction. "Maintained" does not necessarily mean annual maintenance.

"Mechanical means" - Use of hand or power machinery or tools.

"Relatively regular and continuous use" - Vehicular use which has occurred and will continue to occur on a relatively regular basis. Examples are: access roads for equipment to maintain a stock water tank or other established water sources, access roads to maintained recreation sites or facilities, or access roads to mining claims.

ROADLESS. Refers to the absence of roads which have been improved and maintained by mechanical means to ensure relatively regular and continuous use. A trail maintained solely by the passage of vehicles does not constitute a road.

ROADLESS AREA. That area which is roadless, as defined above, and is bounded by a road, the edge of a right-of-way, other land ownership, or a significant imprint of man.

SEDIMENTARY ROCKS. Rocks formed by the accumulation of sediment.

SHEAR ZONE. A geologic zone in which shearing has occurred on a large scale so that the rock is crushed and brecciated.

SILICEOUS; SILICIOUS. Of or pertaining to silica; containing silica, or partaking of its nature. Containing abundant quartz.

SILL. A tabular igneous intrusion that parallels the planar structure of the surrounding rock.

SPECIAL CONCERN ELEMENT. Plant species considered rare or endangered by the New Mexico State Heritage Program, but not legislatively protected.

SPLIT ESTATE. Refers to the situation where the subsurface mineral estate is owned or controlled by a party other than the owner of the surface of the same land area.

SOLITUDE. Outstanding opportunities for solitude or primitive and unconfined recreation are wilderness characteristics examined in the intensive wilderness inventory. Factors contributing to opportunities for solitude are vegetative screening, topographic relief, vistas, and physiographic variety. 1. The state of being alone or remote from habitations; isolation. 2. A lonely, unfrequented, or secluded place.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA). A metropolitan area that has a large population nucleus together with adjacent communities which have a high degree of economic and social integration with that nucleus. Each SMSA has one or more central counties containing the area's main population concentration; an urbanized area with at least 50,000 inhabitants.

STEPPE. Arid land usually characterized as being level and without forests; usually in large tracts and in regions of extreme temperature range and loess soil.

STORAGE TANK. A permanent water holding structure used to supply water to troughs, pipelines, etc.

STRATIFORM. Composed of layers.

STRINGER. A narrow vein or irregular filament of mineral occurring in a rock.

SULFIDE. A compound of sulfur with one other more positive element or radical.

SUPERGENE. Applied to ores or ore minerals that have been formed by generally descending water. Ores or minerals formed by downward enrichment.

SUPPLEMENTAL VALUES. Features of ecological, geological, or other scientific, educational, scenic, or historical value that may be present in an inventory unit. These are not necessary criteria for wilderness suitability, as is stated in the Wilderness Act of 1964, but must be assessed during the intensive wilderness inventory.

SUSTAINED YIELD. Management of a biological resource (as timber) such that the portion removed by one harvest is replaced by growth or reproduction before another harvest occurs.

SYNCLINE. A trough of stratified rock in which the beds dip toward each other from either side.

TECTONIC. Relating to the deformation of the earth's crust.

THREATENED SPECIES. Any species likely to become endangered within the foreseeable future throughout all or a significant part of its range.

TRAVERTINE. Calcium carbonate deposits commonly associated with hot springs.

TROUGH. An elongate and wide depression with gently sloping borders.

TUFF. A compacted deposit of volcanic ash and dust that may contain sand and clay.

UNALLOTTED FEDERAL LANDS. Federal lands which currently are not committed to livestock grazing use.

UNCONFORMABLE. Having the relation of unconformity to the underlying rocks; not succeeding the underlying strata in immediate order of age and in parallel position.

UNDERSTORY. The plants growing beneath the canopy of other plants.

UPLIFT. Elevation of any extensive part of the earth's surface relative to some other parts.

VEHICLE TRAIL. A two-wheel track created only by the passage of vehicles. A trail is not a road.

VEIN. A tubular body, long in two dimensions and short in the third. An occurrence of ore minerals, usually disseminated throughout gangue, or veinstone.

VESICULAR BASALT. Basalt with abundant vesicles formed as a result of the expansion of gases during the fluid stage of lava.

VISUAL RESOURCE MANAGEMENT (VRM) CLASSES.

CLASS I - Natural ecological changes and very limited management activity are allowed. Any contrast created within the characteristic landscape must not attract attention.

CLASS II - Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the landscape. A contrast may be seen but should not attract attention.

CLASS III - Contrasts to the basic elements caused by a management activity may be evident and begin to attract attention in the landscape. The changes, however, should remain subordinate in the existing landscape.

CLASS IV - Contrasts may attract attention and be a dominant feature in the landscape in terms of scale. However, the changes should repeat the basic elements of the landscape.

WATER SPREADER. Usually several small, earthen, rock structures used to slow the water flow and give the runoff a chance to be absorbed by the soils and plants.

WILDERNESS. The definition contained in Section 2(c) of the Wilderness Act of 1964 is as follows: "A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are

untrammelled by man, where man himself is a visitor who does not remain." Wilderness is an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

WILDERNESS AREA. An area formally designated by Congress as part of the National Wilderness Preservation System.

WILDERNESS CHARACTERISTICS. Those characteristics of wilderness as described in Section 2(c) of the Wilderness Act. These include size, naturalness, solitude, primitive and unconfined type of recreation, and supplemental values.

WILDERNESS INVENTORY. An evaluation of the public land in the form of a written description and a map showing those lands that meet the wilderness criteria as established under Section 603(a) of FLPMA and Section 2(c) of the Wilderness Act. The lands meeting the criteria will be referred to as Wilderness Study Areas (WSAs). Those lands identified as not meeting wilderness criteria will be released from further wilderness consideration.

WILDERNESS REVIEW. The term used to cover the entire wilderness inventory, study, and reporting phases of the wilderness program of the BLM.

WILDERNESS STUDY. The process of analyzing and planning wilderness preservation opportunities along with other resource opportunities within the BLM's planning system.

WITHDRAWAL. An action that restricts the use of public land and segregates the land from some or all of the public land or mineral laws.

ZEOLITES. A large group of minerals that are characterized by their easy and reversible loss of water. They are used in the base exchange method of water softening and as gas absorbents or drying agents (filters).

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